Projecting uncertainty: Visualising text-worlds in three statements from the Meredith Kercher murder case

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Abstract:
This article uses Text World Theory (Werth 1999; Gavins 2007) in conjunction with VUE (Visual Understanding Environment) concept mapping software to analyze three statements from the trial of Amanda Knox, convicted in 2009 of the murder of Meredith Kercher. We compare the cognitive structures of the statements and use the insights gained to guide an examination of their individual linguistic features and associated potential interpretative effects. In the first two dictated statements, Knox is projected as an *actor* responsible for the reported actions/events that implicate her in the crime, whereas in the third statement (hand-written in English), she is projected as a *sensor*, presenting more prominent epistemic uncertainty and indicating bewilderment. We argue that using VUE diagramming software extends the scope of Text World Theory, by increasing its capacity for managing analytically lengthy and complex datasets.

Keywords: Amanda Knox, concept mapping software, epistemic (un)certainty, Text World Theory, VUE
Projecting uncertainty: Visualising text-worlds in three statements from the Meredith Kercher murder case

1. Introduction

Text World Theory is a model of discourse processing developed originally by Werth (1999) to account for the cognitive processes involved in meaning-making through language. As part of the realization of this aim, Werth (1999) posits the existence of text-worlds, mental constructs which we form in order to conceptualize and understand discourse. Much of Werth’s original work on Text World Theory focused on the analysis of literary examples. Gavins (2007) develops Werth’s original model and extends its reach, in part by demonstrating its potential for the analysis of a wide variety of text-types beyond literature, including lonely hearts ads, instruction manuals, conversations and audio-guides. More recently, Gavins & Simpson (2015) have used Text World Theory to investigate how an alleged racist event, in which the footballer John Terry insulted fellow player Anton Ferdinand, was discursively constructed in both the media and in the hearing of the case at London Westminster Magistrates’ Court. Gavins & Simpson’s (2015) article demonstrates the value of Text World Theory as a mechanism for understanding both a complex case and the complex language data at the heart of it. As part of the testing of Text World Theory’s applicability to discourse of all types, in this article we apply it in the analysis of three statements made to the Italian police by Amanda Knox, the American woman convicted in 2009 of the murder of her housemate, British student Meredith Kercher, in Perugia in 2007. In addition, we use a concept mapping software package called VUE (Visual Understanding Environment) in order to track patterns in our data. We argue that, in the case of our data, Text World Theory offers a means of managing analytically the complexity that arises from three statements that each describes the same event, and that this supports an assessment of the interpretative effects of Knox’s linguistic choices. We also argue that VUE offers a means of extending the scope of Text World Theory by improving its capacity for managing lengthy and complex datasets. Particular advantages of VUE are the visualization options that it offers and the capacity to then make such visualizations and the analyses behind them available to other researchers. To this end, we argue that VUE improves the falsifiability of Text World Theory analyses.

The case under study / considered here (?) involves three countries, and has attracted international media attention for more than seven years. Kercher was found dead in her apartment in Perugia on 2 November 2007. Incriminated by physical evidence at the scene, Rudy Guede, a burglar, was convicted of murder and aggravated sexual assault. Kercher’s housemate, Amanda Knox, and Knox’s Italian boyfriend, Raffaele Sollecito, were charged with having colluded in her murder. Knox and Sollecito were first convicted in 2009 and sentenced to lengthy jail terms but after re-examining the evidence, in 2011 the appeal court
quashed the guilty convictions and both were released. In 2014, following a retrial, their acquittals were overturned. The case was finally brought to an end on 27 March 2015, when Italy’s Supreme Court annulled the previous convictions and definitively exonerated Knox and Sollecito of the murder.

The three statements that we analyze were made by Amanda Knox on 6 November 2007, the day she was arrested. The statements, hereafter referred to as S1, S2 and S3, are listed in the Appendix,¹ with sentences numbered for ease of reference. We begin with a brief introduction to Text World Theory, before going on to describe the police interrogation protocol that resulted in Knox’s statements and the discourse structures and translation issues involved in the statements in question. We also describe VUE (Visual Understanding Environment), a concept mapping and visualization tool that we used to aid the production of text-world diagrams to support our analysis. We then analyze the discourse functions, communicative purposes, linguistic differences and potential interpretative significance of each statement.

2. Text World Theory
As a cognitive linguistic model of discourse processing, Text World Theory (Werth 1999; Gavins 2007) aims to account for how participants manage the production and reception of discourse. Text World Theory posits that all discourse situations are divisible into three manageable levels of conceptual activity. These are identified by the terms discourse-world, text-world, and world-switch.

Discourse-world refers to the real-world context in which the language event takes place. It comprises a specific real-life context, which includes the discourse participants, their immediate physical surroundings, and the personal or cultural knowledge/experience that the participants draw on to understand and process the language used. Discourse-worlds can involve face-to-face communication, or they can be “split” (Gavins 2007: 26), as is the case in a telephone conversation or in a novel (where the author and readers are separated in both

¹ All of the documents cited in this article were obtained from The Murder Of Meredith Kercher Wiki Site (http://themurderofmeredithkercher.com, last accessed on 03/06/2017), a website created by a group of volunteer editors (some are professional translators and some have expertise in certain relevant(?) areas, such as forensics, DNA, IT or criminal law) to inform the English-speaking world about the case by providing a unique collection of translations of original documents and evidence presented at trial. As indicated in the web mission statement, the translation was done to ensure that the facts are readily available to the public without selective emphasis, misstatement or bias, and has gone through multiple rounds of proofreading and editing, to harmonize the language and to ensure its accuracy.
Text-worlds are detailed mental representations that discourse participants construct in their minds as they communicate. For instance, an interactant in a conversation will form a mental representation of the discourse on the basis of linguistic cues in their interlocutor’s speech; they will use this to process and conceptualize what is being conveyed. Similarly, readers of fiction will construct mental representations based on their reading and use this to form an impression of the fictional world. Werth (1999: 180) describes a text-world as “a deictic space, defined initially by the discourse itself, and specifically by the deictic and referential elements in it”. Those features of language that establish the spatio-temporal parameters of a text-world and the people who populate it (i.e. text-world enactors) are called world-building elements. For example, in Knox’s first statement, linguistic reference to time (Last Thursday 1st November), location (the apartment of my boyfriend), and people (Patrick) function as linguistic cues which readers will use to construct a mental representation of the situation described by Knox. The propositions that propel the discourse forwards are known as function-advancing propositions (examples from S1 include I was in the apartment of my boyfriend Raffaele, I replied to the message and I met Patrick). The identification of function-advancing propositions draws on the categorization system developed in Systemic Functional Grammar (Halliday & Matthiessen 2004), such that Text World Theory distinguishes between material, mental and relational processes.

The term material process refers to physical actions or happenings in the real world; it describes processes of doing and happening. Mental process indicates processes of sensing (i.e. happenings within one’s consciousness). Verbs of perceiving (perception), thinking (cognition) and feeling (affection) are included in this group. Relational processes indicate states of being (including having) and serve to identify or to attribute characteristics. Figure 1 illustrates these concepts using examples taken from Knox’s statements.

<table>
<thead>
<tr>
<th>Process types</th>
<th>Subcategories</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>event (i.e. happening)</td>
<td>I received a message from Patrick.</td>
</tr>
<tr>
<td></td>
<td>action (i.e. doing)</td>
<td>He killed her.</td>
</tr>
<tr>
<td>Mental</td>
<td>perception</td>
<td>I saw Patrick in flashes, blurred images.</td>
</tr>
<tr>
<td></td>
<td>cognition</td>
<td>I do not remember anything.</td>
</tr>
<tr>
<td></td>
<td>affection</td>
<td>These events have deeply bothered me.</td>
</tr>
<tr>
<td></td>
<td>attribution</td>
<td>Patrick is about 170 cm tall...</td>
</tr>
<tr>
<td></td>
<td>identification</td>
<td>One of these people is Patrick.</td>
</tr>
</tbody>
</table>

Figure 1. Examples of process types

All of these processes contribute towards building and advancing our mental representation of the discourse, the text-world. However, there are sometimes changes in the
initial text-world parameters that lead to a “world-switch”. World-switches in a text may be indicated by a deictic shift in time and/or location. When the spatio-temporal information is altered, e.g. through a shift in tense or the use of a spatial or temporal adverbial, a world-switch occurs (for example, we met soon after at about 21:00 at the basketball court). In a text, it is also likely to detect switches to a “modal-world” based on linguistic cues of a speaker/writer’s attitude or knowledge/belief with regard to a particular topic. When a proposition is modalized, its content is held remotely in a modal-world as it cannot be directly incremented into the text-world. Following Palmer (1986) and Coates (1983), modal-worlds are created when an enactor expresses desire, obligation or doubt (Gavins 2005). The sentence I do not remember if Meredith was screaming is an example indicating a switch to an epistemic modal-world triggered by the modal lexical verb remember.

Figure 2 summarizes the principal analytical categories of Text World Theory.

<table>
<thead>
<tr>
<th>World-building elements:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Time</td>
<td>temporal location</td>
</tr>
<tr>
<td>(2) Location</td>
<td>spatial location</td>
</tr>
<tr>
<td>(3) Participants / Enactors</td>
<td>the inhabitants in discourse-world / text-world</td>
</tr>
<tr>
<td>(4) Objects</td>
<td>objects or entities as present in the world</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function-advancing propositions:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Material process</td>
<td>processes of doing and happening</td>
</tr>
<tr>
<td>(2) Mental process</td>
<td>processes of sensing (seeing, feeling or thinking, etc.)</td>
</tr>
<tr>
<td>(3) Relational processes</td>
<td>states of being or having</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>World-switch possibilities:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Deictic world-switch</td>
<td>based on changes in time and/or location</td>
</tr>
<tr>
<td>(2) Boulomaic modal-world</td>
<td>based on expressions of desire, wishes</td>
</tr>
<tr>
<td>(3) Deontic modal-world</td>
<td>based on expressions of duty, obligation</td>
</tr>
<tr>
<td>(4) Epistemic modal-world</td>
<td>based on expressions of knowledge, belief (certainty/uncertainty), or hypothetical expressions</td>
</tr>
</tbody>
</table>

Figure 2. Principal analytical categories of Text World Theory

In effect, world-building elements encompass WHO-WHEN-WHERE information regarding the discourse-world (which in our data constitutes a legal setting, e.g. police station or court room) and text-worlds (e.g. the mental constructs of the events/actions/states reported by discourse participants such as victims, witnesses or suspects). Function-advancing propositions and world-switches cover “WHAT HAPPENED”. All of these components, of course, constitute key factors in investigation and judicial reasoning. As a result, linguistic analysis of the subtle spatial/temporal world-switches and the switches to epistemic modal-worlds projected in legal texts (suspect/witness statements in particular) is likely to be of significant value in the reconstruction and comparison of contentious events.

In the discourse-world of a court case, we can identify a set of participants sharing the
same immediate and ontological environment: the judge, jury, lawyers and any witnesses who testify. Witnesses are open to questioning about what they say. However, not all of their reported events would be considered as admissible evidence in the jury’s decision-making process. In text-world theoretical terms, the principle of accessibility is a key concept that considers whether the discourse participants have sufficient information available to them to assess the truth value of a particular piece of information. For example, what a witness has seen is accessible through questioning; what a witness has heard from someone else, however, is inaccessible by other co-participants and its truthfulness thus remains unverified in that discourse-world (Werth 1999: 214; Gavins 2007: 77-78). The value of this for legal text analysis is that the principle of accessibility or inaccessibility of text-worlds might be applied in the assessment of whether a given proposition is verifiable (admissible) or unverifiable (inadmissible) as evidence to a court of law. We will return to this point later when referring to Knox’s “dream” world in her third statement.

3. A text-world analysis of Knox’s three statements to police

3.1 Context, police interrogation protocol, discourse structure and translation issues

After the discovery of Meredith Kercher’s body on November 2, 2007, Amanda Knox went to the police station several times to testify as a witness. In the late evening of November 5, Raffaele Sollecito was called to the police station to clarify some inconsistencies in his original statement. Knox accompanied him there and stayed in the waiting room. Sollecito, when confronted by the police about the inconsistencies in his statement, rescinded his original claim that Knox had been with him on the night of the murder, thereby removing his support for Knox’s alibi; Sollecito now said that she might have gone out on the night of the murder and he had been home alone. The police took the opportunity to question Knox, focusing particularly on the text message she had sent in reply to Patrick Lumumba, the owner of the bar where she worked part-time. Later on, Knox signed two official statements made in Italian, saying that she had been at the crime scene when Kercher was killed, that she “vaguely remember[ed]” that “Patrick had sex with Meredith” and that “he killed her” (see Appendix). Knox, Sollecito and Lumumba were soon arrested. On the evening of November 6, Knox gave a hand-written statement to the police, in which she tried to explain her previous two statements.

S1 and S2 were made at 01:45am and 05:45am respectively, and in these two statements Knox implicates herself as being at the crime scene and accuses Lumumba of being the real murderer. S3 was handwritten in English by Knox and given to the police in the evening on

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2 The false accusation led to Knox’s conviction of slander on Patrick Lumumba in the murder trial. She had already served a three-year sentence for naming Lumumba.
November 6. In this statement she attempts to clarify what happened on the night of the murder. Before comparing the three statements, it is necessary to first clarify the police interrogation protocol, as well as the translation parameters involved in S1 and S2 which result in differences in discourse structure between those statements and S3.

Following the police interrogation protocol, police interviews usually incorporate two stages: (i) asking the potential suspect/witness a series of questions relating to the incident under investigation, and then (ii) taking the suspect/witness’s dictation down in writing (Olsson 1997; Heydon 2005). In Knox’s case, the interviews that resulted in S1 and S2 were conducted in Italian, with the presence of an interpreter/translator to enable all parties involved to communicate effectively with one another. As a result, the discourse structures and the text production processes involved in S1 and S2 are different from those of S3. As summarized in Figure 3 below, S3 was handwritten by Knox in her native language when she was alone, with no other discourse participants around, and no dictation/translation parameters involved.

Figure 3. Discourse structure differences between S1, S2 and S3

In our subsequent analysis section, we focus particularly on examining the epistemic (un)certainty of Knox’s propositions, using Text World Theory to track the differences in functional effects between the three statements. To support this analysis, we made use of VUE (Visual Understanding Environment), a concept mapping tool that we used to develop visualizations of the text-worlds projected by the three statements. In the next section we explain VUE and its relevance to Text World Theory analysis.

3.2 Diagramming software: VUE

Text World Theory was developed initially to account for how readers build mental representations of fictional worlds as they read. While not essential for such an analysis, visualization techniques have been used since Text World Theory’s inception to plot the conceptual structures of particularly complex discourse. Conventional diagrams visually represent discourse processing through multi-layered boxes (i.e. text-worlds) with arrows indicating the linking or nesting relations between worlds (see Gavins 2007 for a typical example). The value of such diagrams lies in their capacity to distil complexity and to indicate conceptual patterns in the data. However, manual techniques are prohibitive when it comes to producing visualizations of large amounts of data. To this end, in order to diagram the text-worlds projected in the three statements under analysis, we make use of VUE (Visual
Understanding Environment), concept mapping software developed by Tufts University. The use of software for visualization purposes is a new departure for Text World Theory (for the pioneering employment of VUE for text-world diagramming, see Lugea 2012, 2016).

The particular value of VUE is its capacity for storing multiple layers of information, which can then be viewed individually or conflated. Thus VUE offers a means of visualizing the dynamic structure of discourse, wherein text-worlds may be nested inside each other. VUE utilizes “maps” and each map includes a “map info” view, where information about discourse participants, enactors, world-building elements and function-advancing propositions can all be recorded. VUE’s interactive Zoom feature allows the user to draw a diagram of any size, to zoom in to get a close-up view of the file, and to zoom out to see more of the page at a reduced size, thereby facilitating the observance of patterns in the data. The Pathways feature enables the user to create custom “trails” through nodes (boxes) in the map. It is particularly useful in highlighting specifically marked content (e.g. modalized propositions) while at the same time maintaining a sense of its overall context within a VUE map. Our analysis in the next section makes use of VUE to construct the text-world structures of the three statements by Knox. It should be noted that figures below are used to illustrate the use of VUE in our diagramming process to underpin the qualitative analysis of the statements. As we are unable to present the interactive Zoom features, some of the figures may be unclear in view of textual details.

3.3 Text-world structures of the three statements

Our analysis in this section is focused particularly on epistemic modality as conveyed in the statements. Epistemic modality covers a wide spectrum of belief, from absolute certainty at one end of the scale to complete lack of confidence at the other (Lyons 1977; Perkins 1983; Nuyts 2001). Through the modal system, we are able to examine Knox’s statements in terms of the varying degrees of confidence she expresses in her commitment to the truth of a particular proposition. First we describe the diagramming process of S1 in detail, so as to illustrate its value in allowing the analyst an overview of the text-worlds projected.

The initial police interview setting forms a starting point for the text-world diagram, which is constructed based on the referential information specified at the beginning of the official statement, i.e. at the police station in Perugia, at 1:45 AM on November 6, 2007 and populated by the discourse participants Amanda Knox, the chief inspector, two police officers and the interpreter. We use rectangular boxes to indicate a discourse-world, and rounded rectangular boxes shaded with different gray scales to indicate different kinds of text-worlds. Light gray is used to mark the material processes of doing and happening, i.e. the text-worlds

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3 VUE (http://vue.tufts.edu/) is free to download and compatible with all operating systems. It provides a flexible visual environment for structuring, presenting and sharing digital information.
projecting physical actions or events (e.g. *I will provide..., I received a message...*). Dark gray indicates mental processes (i.e. happenings within one’s consciousness, e.g. *I vaguely remember that he killed her*). Arrows are used to indicate a deictic world-switch or a switch to modal-worlds.

In S1, the propositions in the initial text-world are in the present tense; at the police station in Perugia, Knox states that she knows those people who often visit hers and Kercher’s house and that she will provide the police with their contact information, including Patrick Lumumba’s. She then gives detailed information about Lumumba. Following this, we can identify three spatio-temporal world-switches, two of which (sentences 3, 4 and 6) are flashbacks, during which Knox reflects on what happened on 1 November, the night of the murder.

In the flashbacks, Knox places herself in the crime scene, as indicated in the text message she sent in reply to Patrick Lumumba – *we would meet immediately*, and the affirmative declaration: *I met Patrick at the basketball court*, and then we went home.

What happens next is a switch to an epistemic modal-world (in sentences 7-9), where Knox shows various degrees of (un)certainty about what actually happened on the night after [they] went home.
The propositions with strong epistemic uncertainty (e.g. *I find it difficult to remember…; I do not remember well….*) are systematically marked with a darker shade of grey and are placed in dashed rectangular boxes. By contrast, the propositions with relatively positive certainty remain unmarked (e.g. *but Patrick had sex with Meredith*) (for the literature on modality and certainty/uncertainty, see Coates 1983; Perkins 1983; Palmer 1986). Figure 6 thus presents the overall cognitive structure of text-worlds in S1.

Figure 6. Statement 1 text-worlds diagram

As mentioned earlier, one of the useful features in VUE is the *Pathways* function. This feature is useful for highlighting particular marked information in a group for ease of observing associated patterns. The *Pathways* function allows us to focus on specific content while at the same time maintaining a sense of the overall context. Figures 7 and 8 illustrate two different groups of epistemic information in S1 (with emphasis highlighted to be compared with the information in S2).
Figure 7 shows Knox’s confirmed-certain information in S1. She places herself in the crime scene and implicates Lumumba as the one who had sex with Meredith and who killed her. However, much crucial detail with regard to the motive for the crime is missing or remains unconfirmed. For example, the reason for arranging a meeting with Lumumba and going home together with him (i.e. to the crime scene on the night of the murder) is not mentioned anywhere. This is a crucial question which is consequently the main focus of the police interrogation, and yet the answers remain obscure in this statement. With regard to what actually happened on the night of the murder, Knox shows strong epistemic uncertainty, as shown in Figure 8.

S2 shows a very similar pattern to S1, where Knox is making the same strong claim that she was at the crime scene with Lumumba, “the murderer”. Following the same diagramming and marking style, Figure 9 presents the overall text-world structure in S2.
Figure 10 below presents the confirmed-certain information in S2 (with emphasis highlighted to be compared with Figure 7) and Figure 11 the unconfirmed-uncertain information. From this we can observe that in S2 Knox also provides similar affirmative information that is self-incriminating. She confirms that she met Lumumba on the night of the murder, and that they went home together; she also confirms that Lumumba and Kercher went into the room, and she imagined what could have happened.

Again, the crucial details are missing from the police interrogation: the motivation for meeting Lumumba and going to the crime scene on the night of the murder, whether the crime was plotted in advance, whether Kercher was forced by violence, etc. Similar to what is said in S1 (*I find it difficult to remember these moments*), with regard to the crucial details of the crime, Knox appears to be greatly confused (*I do not remember anything*), as shown in the negative propositions in Figure 11.
Nonetheless, the accusation that Lumumba was involved in the sexual abuse and murder is more forceful in S2, as implicated in the assertions that he went into Meredith’s room, she heard her screaming and some thuds, and she imagined what could have happened.

Thus, the common pattern we observe from the groups of epistemic certainty and uncertainty information in S1 and S2, marked via VUE’s Pathway feature, is that Knox confirms her involvement in the crime and implicates Patrick Lumumba as the murderer. Yet neither statement provides any crucial information relating to the motivation and crime details.

We now turn to the third statement Knox made to the police. As mentioned earlier, the discourse structures and text production processes of S1 and S2 are substantially different from those of S3. S3 was handwritten by Knox in her native language when she was alone, with no dictation/translation parameters involved. These factors result in a different text-world structure in S3, as shown in Figure 12.
In Figure 12, we see a higher proportion of text shaded in dark gray, as compared with S1 in Figure 6 and S2 in Figure 9. That is, the epistemic modalized propositions indicating Knox’s varying degrees of knowledge/belief with regard to the murder, Lumumba’s involvement, her alibi, and the police interrogation, are more prominent in S3. Figure 13 indicates particularly the marked uncertain information in S3, with emphasis highlighted for comparison with S1 and S2.
In S3, Knox does not make the same strongly incriminating claim as she did in S1 and S2, saying that she was at the crime scene that night. However, neither does she deny what was said in her previous statements. What is contained in this handwritten statement, instead, is a high proportion of propositions indicating strong uncertainty (e.g. strange, confusing, perhaps, I am not quite sure, I am not sure, unreal, like a dream, I’m very confused, I don’t understand, I don’t remember FOR SURE if I was at my house that night). In contrast to the declarative assertions in S1 and S2, S3 presents more interrogatives from Knox herself, as underlined in Figure 13 (e.g. What proof? Why did Raffaele lie (about her alibi)? Did he lie? Why did I think
of Patrick? Who is the REAL murderer?). This series of self-reflective questions projects a psychological state of great confusion. It should also be observed that Knox’s original affirmative declarations in S1 and S2 with regard to the actual events, i.e. Knox’s meeting Lumumba, staying in the kitchen and hearing Kercher screaming, all become embedded in her mental world in S3: *in my mind, in my head, seem unreal to me, like a dream*. In effect, the events she reported affirmatively in S1 and S2 have all been shifted to her mental world in S3, and the truth value of the propositions thus becomes inaccessible, in text-world theoretical terms.

3.4 Process types and discourse function
All texts, produced in all discourse-worlds, can be seen to have a function or purpose in their discourse-world environments (Gavins 2007). The analysis of function-advancing propositions in the three statements shows more prominent material processes (intentional actions or events) in S1 and S2 than in S3. In S1, for example, the sequence of past events (material process types) reported in Knox’s statement can be plotted as in Figure 14.

![Figure 14. Material process types in S1](image)

It is easy to observe from the material verbal groups that Knox is often projected as an *actor*, responsible for the actions described (e.g. *I replied to the message, I met Patrick, we went home*). Two key material processes (*Patrick had sex with Meredith and he killed her*), in which Patrick [Lumumba] is the *actor* and Meredith [Kercher] is the *goal* affected by the *material process*, are embedded in a modal-world projected by Knox, as indicated by the cognitive verb *remember*, which is neither inherently factive nor non-factive. As a result, the truthfulness of these two reported events becomes dubious and is open to question. Similarly, in S2, the key material processes that impact on assessments of the crime, e.g. *Patrick and Meredith went into Meredith’s room and they stayed together in the room*, are also embedded in modal-worlds and are thus not fully verifiable. Overall, the communicative objectives shown in these two statements seem more attuned to Knox being eager to confirm Lumumba’s involvement in the crime and to incriminate herself.

By contrast, in S3, we see that mental processes (perception, cognition, emotions) are more prominent than material process (actions, events), when compared to S1 and S2. Knox is presented as a *sensor* rather than an *actor*. In S3, the complement clauses attached to the
mental processes (e.g. *think, remember*) are mainly related to her uncertainty and confusion with regard to the “confession” she made in the previous two statements, the police’s claim that they have evidence against her, and her boyfriend’s “lie” about her alibi. S3 projects more prominent epistemic modal-worlds which impact on how Knox is characterized; here she is presented as confused and struggling to figure out what happened on the night of the murder as well as on the night of the police interview.

4. **A linguistic comparison of the dictated/written statements**

The analysis of the three statements from a Text World Theory perspective shows substantial differences between statements 1 and 2 and statement 3 with regard to the text-worlds projected. This overview of macro-level variations raises the question of how these differences are manifested linguistically. In this section we are concerned particularly with the stylistic differences between statements 1 and 2 and statement 3. We focus on identifying any inconsistencies and contradictions in terms of the actions/events/states reported in the statements, and considering possible reasons for and implications of these linguistic differences. There are three stylistic differences in particular that in our view are significant. The first concerns the level of detail in the statements, the second concerns practices relating to reference and naming, and the third concerns differences in the formation of salutations.

4.1 Level of information

To begin with the issue of differing levels of information, here are the extracts where Patrick Lumumba’s name was mentioned for the first time in each statement.

S1 (sentence 2):
One of these people is Patrick, a colored citizen who is about 1,70-1,75 cm tall, with braids, owner of the pub “Le Chic” located in Via Alessi and I know that he lives in the area near the roundabout of Porta Pesa. Tel. 393387195723, pub where I work twice a week on Mondays and on Thursdays, from 22.00 until about 2.00.

S2 (sentence 1):
I am really afraid of Patrick, the African boy who owns the pub called “Le Chic” located in Via Alessi where I work periodically.

S3 (sentence 10):
After the movie I received a message from Patrik [sic], for whom I work at the pub “Le Chic”.

The appositional phrases in the above extracts are used to explain or identify who Lumumba is. In S1, Lumumba’s skin color, his height, his hair style, the location of his pub, where he
lives, his telephone number, and Knox’s working hours in the pub are reported in much greater detail than in S3 (for whom I work at the pub “Le Chic”). Given that Knox had at that time been interrogated for hours and was likely to have been in a state of considerable stress, it seems unlikely that she would have been able to present so much detail in such a structured manner. It is likely, then, that the statement was not a verbatim transcription but was partially constructed by the interviewing officer.

We can observe a similar level of detail in S2: “We went to my apartment in Via della Pergola n.7”. The prepositional phrase indicates the address of Knox’s apartment, though the inclusion of the number of the apartment renders the phrase ungrammatical. Again, it seems unlikely that this information is a verbatim transcription of Knox’s words, and the function of the prepositional phrase seems to be to serve as a reminder of her stated presence at the crime scene on the night of the murder. S1 and S2 include details that are not only too precise for a tired and pressured witness, but which are also not redolent of American English. For example, the fact that Patrick’s height is given in metric measurements and Knox’s working hours are given using the 24-hour clock are highly suggestive of Italian influence in the encoding of these details. Another linguistic pattern redolent of Italian is the use of the preposition of in the genitive construction roundabout of Porta Pesa, which might more naturally be expressed as Porta Pesa roundabout by a native English-speaker. These style markers may indicate that Knox was not the originator of these details, or alternatively that the translator has attempted to render statements attributed to Knox into an Italian formulation. It is important to note, however, that without knowing who translated the texts, we can neither confirm nor reject these possibilities.

4.2 Deviant reference
The extracts below present the first time Knox refers to her boyfriend Raffaele Sollecito in the first (?) two statements, with the relevant reference underlined:

S1 (sentences 3~5):
Last Thursday 1st November, day on which I usually work, while I was in the apartment of my boyfriend Raffaele, at about 20.30 I received a message from Patrick on my mobile, telling me that that evening the pub would remain closed because there were no people, therefore I didn’t have to go to work. I replied to the message saying that we would meet immediately, therefore I went out telling my boyfriend that I had to go to work. I wish to state first that in the afternoon I had smoked a joint with Raffaele.

S2 (sentences 11~12):
I am not sure if Raffaele was there as well that night but I clearly remember that I woke up at my boyfriend’s home, in his bed and that I came back home in the morning when I found the door of the apartment open. When I woke up in the morning of November 2nd
I was in bed with my boyfriend.

In S2, Knox’s reference to Raffaele may be interpreted as deviation from the conventions of Standard English. She initially refers to Raffaele with his first name, and then twice uses the noun phrase my boyfriend anaphorically. This is unusual, given the more normal practice of using pronouns in anaphoric reference. Moreover, the normal convention would be to indicate the nature of the relationship with Raffaele in the first reference to him, in order to avoid the necessity of a longer impersonal noun phrase later on; as it stands, the stylistic choice gives rise to a potential interpretative ambiguity wherein my boyfriend might conceivably refer to someone other than Raffaele. Since we know this not to be the case, this again is suggestive of S2 not being a verbatim transcription of Knox’s statement, but one that is partially constructed by the interviewing officer. By contrast, in Knox’s handwritten statement (S3), she refers to Raffaele with his first name 17 times, and only once does she refer to him as my boyfriend.

4.3 Salutations in Knox’s text message to Lumumba
The police interrogation on 6 November focused on a text message exchanged between Knox and her boss Patrick Lumumba. Knox at first told the police that she had not responded to Patrick’s message, but her phone record showed that she had. Part of the text message, written in Italian as Ci vediamo (‘See you’), functions as a conventional sign-off but might also be interpreted as a commitment on the part of Knox to meet Lumumba later (i.e. on the night of the murder). The police thus persistently inquired about this particular information. At this point Knox was also informed that her boyfriend was no longer corroborating her alibi. This information caused Knox to become emotionally agitated, as indicated in several witness statements (see The Murder Of Meredith Kercher Wiki Site), and she began to accuse Lumumba of murder. The translated SMS texts shown in the three statements are listed below. The first is represented in indirect writing, while the second two are presented directly:

S1 (sentence 4):
I replied to the message saying that we would meet immediately…

S2 (sentence 2):
I met him in the evening of November 1st 2007, after sending him a reply message saying “I will see you”.

S3 (sentence 12):
Now I remember to have also replied with the message: “See you later. Have a good evening!”

The changes in linguistic formulation precipitate dramatic shifts in meaning and interpretative
significance. The text messages reported in S1 and S2 are self-incriminating in that Knox commits herself to meeting Lumumba whereas in S3 she shows no intention of meeting him, as indicated by the phrase “Have a good evening!” Since faithfulness is a key issue with regard to the content of Knox’s text message to Lumumba, we examined the testimonies of Lumumba and Rita Ficarra (the Chief Inspector who questioned Knox that night) to see how the text message is recorded by them. In these, the message is recorded as having been “Certo.Ci vediamo più tardi. Buona serata” (“Sure. See you later. Have a good evening”).

Clearly, S3 gives the most faithful account of the message (Ci vediamo, buona serata), as compared to the formulations in S1 and S2. This finding raises a number of issues. First, it is important to note that when Knox was first asked about the text message, she was being interviewed only as a witness, not as a suspect. Furthermore, the police had shown her the original text message she sent to Patrick Lumumba. We may wonder why Knox would implicate herself in the crime by reporting self-incriminating SMS messages in her first two statements. One possibility, then, is that the difference in English formulations is a result of different translations of the same text message in Italian.

To clarify these issues, we examined the official court documents signed by all of the discourse participants. This clearly shows that S1 and S2 report different text message content in Italian (see Figure 15): ci saremmo visti subito in S1, which literally means we would meet immediately (an indirect report of the message content), and “ci vediamo” in S2. The latter contains a direct quote (“see you”), with the temporal adverb “più tardi” (later) and the key phrase “buona serata” (“Have a good evening!”) absent. There is, then, no reference to a later encounter than that evening.
At this point, it is perhaps useful to quote an extract from the testimony of Inspector Rita Ficarra, one of the discourse participants that night (see Figure 6). In her testimony, Ficarra states that they (i.e. all of the discourse participants) have the mobile phone with the questioned message in front of them and they saw it together:

Rita Ficarra: …we found a message sent around 2000-2030 hours it seems to me, around that time but at any rate it is in the files because we also photographed the mobile phone with the message where the name of Patrick appeared, and there was this message that said… Can I report it?

Judge Massei: Yes, did you see it?

Rita Ficarra: Yes, certainly I saw it. We saw it together. It said “Certainly”...

Rita Ficarra: Yes. “Certainly. See you later: Have a good evening.” [Certo. Ci vediamo più tardi. Buona serata]. It was the only message of that evening, and we asked who this Patrick was, and this seemed to us an appointment, see

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4 Inspector Rita Ficarra’s testimony was given in Italian and its English translation done by ZiaK/Katsgalore was obtained from The Murder Of Meredith Kercher Wiki Site: http://themurderofmeredithkercher.com/Rita_Ficarra%27s_Testimony_(English)#Rita_Ficarra.27s_Testimony1/25 (last accessed on 03/06/2017).
you later, certainly, in response to another message...

In a legal setting the interrogator and interpreter/translator are bound by a code of ethics to provide a complete, accurate and faithful report or translation/interpretation, without altering, adding or omitting anything to what was originally stated (Framer 2005). As shown in Figure 15, all of the discourse participants signed the two statements made by Knox. However, the SMS content reported in S1 or S2 is not exactly the same wording as in Knox’s original text message. The English formulations in S1 and S2 have been proved not as a result of different renditions of the original message in Italian; instead, it would appear that some element of textual alteration has been effected during the interview/translation process.

Perhaps also of significance here is a difference in the subject lines of the official statements from “Transcript of summary information [sommarie informazioni] by person informed of facts” in S1 to “Transcript of spontaneous statement [spontanee dichiarazioni]” made by Knox in S2 (see Figure 15). The rewording in the title of the transcript may be in the interests of precision. Such a linguistic reformulation, however, leads to different legal significance, as the latter emphasizes more forcefully that the self-incriminating statement was made of Knox’s free will and in her own words. Again, considering the fact that S1 and S2 are almost identical in terms of content, such a linguistic change seemingly points to reinforcement (whether intentionally or not) of the legitimacy of the statements and Knox’s involvement in the crime.

The dispute about S1 and S2 lies in (a) Knox claiming that she had been subjected to a hostile interrogation over long hours at the police station and had not been treated fairly, which thus caused her to make incriminating statements, and (b) the fact that the interrogation was conducted without an attorney present and was not recorded. Knox later recanted the statements and the Court also ruled S1 and S2 inadmissible evidence in the criminal trial. However, it may be argued that the first two statements are inadmissible as evidence not only because of the illegal procedure of evidence collection, but also because the statements were highly likely to have been altered, as shown in the analysis above. The linguistic differences with regard to the level of detail and the reference to Knox’s boyfriend Raffaele may result from the fundamental differences in discourse structure between the statements and/or the translation parameters involved. However, the reformulation in the report of the content of the text message discussed above seems to be far more controversial, given that despite the exact text message content being presented to all discourse participants, it was not faithfully recorded in the official documents.

5. Conclusion
Werth’s original aim in the development of Text World Theory was to account “for the cognitive processes behind the production and interpretation of all forms of human
communication” (Gavins 2007: 6). To this end, Text World Theorists have endeavoured to show how the model can be applied in the analysis of discourse of all types. This article demonstrates its application in the analysis of legal statements. We would argue that the value of Text World Theory in the analysis of this particular text-type is that it allows for the identification of macro-level differences between statements. This can offer an insight into the likely interpretative effects that each will generate. Such macro-level cognitive analyses can also highlight potential areas of the texts for detailed linguistic analysis, as is the case in our discussion of the stylistic differences between the three statements analyzed. Text World Theory’s concept of accessibility might also have a bearing on whether particular elements of a statement are likely to be deemed admissible as evidence.

That said, we should be clear that we do not view Text World Theory as any form of panacea; our claim is rather that it offers a means of dealing with discoursally complex language by enabling the observation of patterns in the data. Part of the way in which this is achieved is via Text World Theory’s capacity for allowing the analyst to visualize the multi-layered nature of discourse. This, though, can become prohibitively difficult if texts are lengthy. To overcome this problem, we have shown how the concept mapping tool, VUE, may be usefully employed in diagramming text-world structures of witness/suspect statements. VUE, of course, offers just one means of visualizing complex language data and if the value of such technology is to be fully realized, then the next stages of development will necessitate both a level of automation to the linguistic annotation of data and a query facility for users. The integration of alternative methods of visualization may also be valuable. Issues of data storage will also need to be addressed in the development of next-generation software.

There remains, of course, work to be done in improving the reliability of Text World Theory analyses and in making the visualizations stemming from these accessible to other analysts for the purposes of replication. We suggest that this should be an aim for future research. While we do not claim that the insights gained from our analysis could not be generated by other methods, we do argue that Text World Theory offers a particularly valuable means of visualizing complex language data, and that this potential increases the ease with which pertinent insights may be gained. For this reason, we suggest that there is a value in further research that explores the application of Text World Theory in the analysis of legal discourse.
Appendix

Statement 1:
On November 6th 2007, at 01.45, in Perugia at the Offices of the Squadra Mobile of the Questura of Perugia. Before the undersigned officers of the Judicial Authority Chief Inspector, FICARRA Rita, assisted by ZUGARINI lorena and RAFFO Ivan, respectively on duty at the office above mentioned in the epigraph and in presence of the person mentioned in the re who sufficiently understands and speaks Italian, assisted by the English-speaking interpreter Anna Domino, who, in relation to the death of KERCHER Meredith Susanna Cara and after the precedent declarations, declares the following:

In order to complete what has been retailed before by means of precedent declarations made at this Office, I wish to clarify that I know and see other people who have also come to my houses sometimes and who have also met Meredith and of whom I will provide the relevant mobile numbers.

One of these people is Patrik, a colored citizen who is about 1,70-1,75 cm tall, with braids, owner of the pub “Le Chic” located in Via Alessi and I know that he lives in the area near the roundabout of Porta Pesa. Tel. 393387195723, pub where I work twice a week on Mondays and on Thursdays, from 22.00 until about 2.00.

Last Thursday 1st November, day on which I usually work, while I was in the apartment of my boyfriend Raffaele, at about 20.30 I received a message from Patrick on my mobile, telling me that that evening the pub would remain closed because there were no people, therefore I didn’t have to go to work. I replied to the message saying that we would meet immediately, therefore I went out telling my boyfriend that I had to go to work. I wish to state first that in the afternoon I had smoked a joint with Raffaele, therefore I felt confused because I do not usually make use of narcotics nor harder drugs. I met Patrick soon after at the basketball court of piazza Grimana and we went home. I do not remember if Meredith was already there or if she came later. I find it difficult to remember those moments but Patrick told me with Meredith with whom he was infatuated but I do not remember well if Meredith had been threatened before. I vaguely remember that he killed her.

Statement 2:
On November 6th 2007, at 05.45, in Perugia at the Offices of the Squadra Mobile of the Questura of Perugia. Before the Undersigned Dr. MIGNINUMI Giuliano Deputy Prosecutor of the Public Prosecutor’s Office of the Republic at the Court of Perugia and before the Judicial Police Officers Chief Inspector, FICARRA Rita, respectively on duty at the office above mentioned in the epigraph and in presence of the person mentioned in the re who although sufficiently understands and speaks Italian is assisted by the English-speaking interpreter Anna Domino and who in relation to the death of KERCHER Meredith Susanna Cara and after the precedent declarations, declares the following:

I wish to relate spontaneously what happened because these events have deeply bothered me and I am really afraid of Patrick, the African boy who owns the pub called “Le Chic” located in Via Alessi where I work periodically.

I met him in the evening of November 1st 2007, after sending him a reply message saying “I will see you”. We met soon after at about 21.00 at the basketball court of Piazza Grimana. We went to my apartment in Via della Pergola n. 7. I do not clearly remember if Meredith was already at home or if she came later, what I can say is that Patrick and Meredith went into Meredith’s room, while I think I stayed in the kitchen. I cannot remember how long they stayed together in the room but I can only say that at a certain point I heard Meredith screaming and as I was scared I plugged up my hears. I then do not remember anything. I am very confused. I do not remember if Meredith was screaming and I heard some thuds too because I was upset, but I imagined what could have happened.

I have met Patrick this morning, in front of the Universita Per Stranieri and he has asked me some questions, to be more accurate he wanted to know what the Policemen had asked me. I think he has also asked me if I wanted to see some journalists, maybe in order to know if I knew anything about Meredith’s death. I am not sure if Raffaele was there as well that night but I clearly remember that I woke up at my boyfriend’s home, in his bed and that I came back home in the morning when I found the door of the apartment open. When I woke up in the morning of November 2nd I was in bed with my boyfriend.
Statement 3:
Transcript of Amanda Knox's Handwritten Statement to Police on the Evening of November 6, the Day She Was Arrested: (Transcript obtained from Moore, Malcolm Transcript of Amanda Knox's note The Telegraph 22 Nov 2007. All errors are in the original.)

This is very strange, I know, but really what happened is as confusing to me as it is to everyone else. I have been told there is hard evidence saying that I was at the place of the murder of my friend when it happened. I This, I want to confirm, is something that to me, if asked a few days ago, would be impossible. I I know that Raffaele has placed evidence against me, saying that I was not with him on the night of Meredith's murder, but let me tell you this. In my mind there are things I remember and things that are confused. My account of this story goes as follows, despite the evidence stacked against me:

On Thursday November 1 I saw Meredith the last time at my house when she left around 3 or 4 in the afternoon. Raffaele was with me at the time. We, Raffaele and I, stayed at my house for a little while longer and around 5 in the evening we left to watch the movie Amelie at his house. After the movie I received a message from Patrik [sic], for whom I work at the pub "Le Chic". He told me in this message that it wasn't necessary for me to come into work for the evening because there was no one at my work.

Now I remember to have also replied with the message: "See you later. Have a good evening!" and this for me does not mean that I wanted to meet him immediately. In particular because I said: "Good evening!" What happened after I know does not match up with what Raffaele was saying, but this is what I remember. I I told Raffaele that I didn't have to work and that I could remain at home for the evening. After that I believe we relaxed in his room together, perhaps I checked my email. Perhaps I read or studied or perhaps I made love to Raffaele. In fact, I think I did make love with him.

However, I admit that this period of time is rather strange because I am not quite sure. I smoked marijuana with him and I might even have fallen asleep. These things I am not sure about and I know they are important to the case and to help myself, but in reality, I don't think I did much. One thing I do remember is that I took a shower with Raffaele and this might explain how we passed the time. In truth, I do not remember exactly what day it was, but I do remember that we had a shower and we washed ourselves for a long time. He cleaned my ears, he dried and combed my hair.

One of the things I am sure that definitely happened the night on which Meredith was murdered was that Raffaele and I ate fairly late, I think around 11 in the evening, although I can't be sure because I didn't look at the clock. After dinner I noticed there was blood on Raffaele's hand, but I was under the impression that it was blood from the fish. After we ate Raffaele washed the dishes but the pipes under his sink broke and water flooded the floor. But because he didn't have a mop I said we could clean it up tomorrow because we (Meredith, Laura, Filomena and I) have a mop at home. I remember it was quite late because we were both very tired (though I can't say the time).

The next thing I remember was waking up the morning of Friday November 2nd around 10am and I took a plastic bag to take back my dirty clothes to go back to my house. It was then that I arrived home alone that I found the door to my house was wide open and this all began. In regards to this "confession" that I made last night, I want to make clear that I'm very doubtful of the verity of my statements because they were made under the pressures of stress, shock and extreme exhaustion. Not only was I told I would be arrested and put in jail for 30 years, but I was also hit in the head when I didn't remember a fact correctly. I understand that the police
are under a lot of stress, so I understand the treatment I received.

However, it was under this pressure and after many hours of confusion that my mind came up with these answers. In my mind I saw Patrik in flashes of blurred images. I saw him near the basketball court. I saw him at my front door. I saw myself cowering in the kitchen with my hands over my ears because in my head I could hear Meredith screaming. But I've said this many times so as to make myself clear; these things seem unreal to me, like a dream, and I am unsure if they are real things that happened or are just dreams my head has made to try to answer the questions in my head and the questions I am being asked. But the truth is, I am unsure about the truth and here's why:

1. The police have told me that they have hard evidence that places me at the house, my house, at the time of Meredith's murder. I don't know what proof they are talking about, but if this is true, it means I am very confused and my dreams must be real.

2. My boyfriend has claimed that I have said things that I know are not true. I KNOW I told him I didn't have to work that night. I remember that moment very clearly. I also NEVER asked him to lie for me. This is absolutely a lie. What I don't understand is why Raffaele, who has always been so caring and gentle with me, would lie about this. What does he have to hide? I don't think he killed Meredith, but I do think he is scared, like me. He walked into a situation that he has never had to be in, and perhaps he is trying to find a way out by disassociating himself with me.

Honestly, I understand because this is a very scary situation. I also know that the police don't believe things of me that I know can explain, such as:

1. I know the police are confused as to why it took me so long to call someone after I found the door to my house open and blood in the bathroom. The truth is, I wasn't sure what to think, but I definitely didn't think the worst, that someone was murdered. I thought a lot of things, mainly that perhaps someone got hurt and left quickly to take care of it. I also thought that maybe one of my roommates was having menstrual [sic] problems and hadn't cleaned up. Perhaps I was in shock, but at the time I didn't know what to think and that's the truth. That is why I talked to Raffaele about it in the morning, because I was worried and wanted advice.

I also know that the fact that I can't fully recall the events that I claim took place at Raffaele's home during the time that Meredith was murdered is incriminating. And I stand by my statements that I made last night about events that could have taken place in my home with Patrik, but I want to make very clear that these events seem more unreal to me that what I said before, that I stayed at Raffaele's house.

3. I'm very confused at this time. My head is full of contrasting ideas and I know I can be frustrating to work with for this reason. But I also want to tell the truth as best I can. Everything I have said in regards to my involvement in Meredith's death, even though it is contrasting, are the best truth that I have been able to think.

[illegible section]

I'm trying, I really am, because I'm scared for myself. I know I didn't kill Meredith. That's all I know for sure. In these flashbacks that I'm having, I see Patrik as the murderer, but the way the truth feels in my mind, there is no way for me to have known because I don't remember FOR SURE if I was at my house that night.

The questions that need answering, at least for how I'm thinking are:

1. Why did Raffaele lie? (or for you) Did Raffaele lie?

2. Why did I think of Patrik?

3. Is the evidence proving my pressance [sic] at the time and place of the crime reliable? If so, what does
this say about my memory? Is it reliable?
4. Is there any other evidence condemning Patrik or any other person?
3. Who is the REAL murder [sic]? This is particularly important because I don't feel I can be used as condemning testimony [sic] in this instance.
I have a clearer mind that I've had before, but I'm still missing parts, which I know is bad for me. But this is the truth and this is what I'm thinking at this time. Please don't yell at me because it only makes me more confused, which doesn't help anyone. I understand how serious this situation is, and as such, I want to give you this information as soon and as clearly as possible.
If there are still parts that don't make sense, please ask me. I'm doing the best I can, just like you are.
Please believe me at least in that, although I understand if you don't. All I know is that I didn't kill Meredith, and so I have nothing but lies to be afraid of.

References