



When narrative takes over: The representation of embedded mindstates in Shakespeare's *Othello*

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Abstract

In recent times, researchers across a variety of disciplines in the humanities and social sciences have been interested in the human ability to process embedded mindstates, also known as 'multiple-order intentionality' (MOI): A *believes* that B *thinks* that C *intends* (etc.). This task is considered increasingly cognitively demanding with every order of embedding added. However, we argue that the way in which the information relevant to the task is represented in language (in particular, using a narrative) greatly influences how well people are able to deal with MOI cognitively. This effect can be illustrated by paraphrasing situations presented by a play such as Shakespeare's *Othello*: by the end of Act II the audience has to understand that Iago *intends* that Cassio *believes* that Desdemona *intends* that Othello *believes* that Cassio *did not intend* to disturb the peace. Formulated this way, using sentence embedding to express the intentional relationships, this is highly opaque. At the same time, we know that *Othello* has been understood and appreciated by innumerable different audiences for ages. What is it that the play's text does to make the audience understand all these embedded mindstates without undue cognitive strain? In this article we discuss six 'expository strategies' relevant to the representation of MOI and illustrate their working with examples from Shakespeare's *Othello*.

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1 Introduction

Normally developed human adults are indubitably nature's mindreading champions: even when provided with only limited cues, we are often able to form strikingly elaborate understandings of what others think, believe, intend, desire, and so on. This capability is often referred to as 'Theory of Mind' or 'mindreading'. When multiple mindstates are embedded, the term 'multiple-order intentionality' (MOI) is used: A *knows* that B *believes* that C *intends* (etc.).

In recent years, scientists and scholars from various disciplinary backgrounds have made connections between MOI and literature. It is argued that readers of fiction not only have to keep track of what characters think (believe, intend, desire, etc.), but also of what they think these characters think that *other* characters think. Dunbar suggests that, in this way, an audience reading or watching Shakespeare's *Othello* has to work at higher orders of intentionality: 'they have to *believe* that Iago *intends* that Othello *imagines* that Desdemona *is in love* with Cassio' (2008: 414, italics added).¹

This seems to pose a paradox: on the one hand, working at higher orders of intentionality is considered cognitively taxing (Kinderman et al., 1998; Stiller and Dunbar, 2007). On the other hand, it is clear that a play such as *Othello* has been understood and appreciated for ages, indicating that a normally gifted reader/watcher can follow it without undue cognitive strain. This suggests that some aspects of the exposition of information in *Othello* and comparable texts must alleviate the cognitive burden of processing MOI.

Using examples from *Othello*, we will discuss six strategies characteristic of (literary) narrative discourse that support the ability of readers to keep track of the mindstates of characters, even when these mindstates are mutually related and embedded in complicated ways. But before doing so, we will address MOI in some more detail, and discuss several possibilities to express embedded mindstates in language. We will conclude by discussing how our findings fit into a more general debate about the human ability to read minds.

2 Mindreading, theory of mind and multiple-order intentionality

During the 1970s, several academic fields intensified their interest in how, and to what extent, humans and other primates can engage in taking the perspectives of others. Dennett (1971, 1987) introduced his concept of the 'intentional stance' and Premack and Woodruff (1978) made the term 'theory of mind' famous. Their work initiated a tradition of experimental and social research and raised fundamental debates among philosophers, psychologists, ethologists, neuroscientists, and contributors from other fields. A rich and insightful overview is given by Apperly in his recent monograph *Mindreaders* (2011). In this article we will follow Apperly's suggestion to drop the term 'theory of mind' (to avoid the implication that attributing mindstates is like having a theory) and refer to the

Table 1.

P_1	[I know that] Will is a sailor.	<i>first order intentionality</i>
P_2	[I know that] Bill believes that Will is a sailor.	<i>second order intentionality</i>
P_3	[I know that] Mary believes that Bill believes that Will is a sailor.	<i>third order intentionality</i>
P_4	[I know that] Peter believes that Mary believes that Bill believes that Will is a sailor.	<i>fourth order intentionality</i>
P_5	[I know that] John believes that Peter believes that Mary believes that Bill believes that Will is a sailor.	<i>fifth order intentionality</i>
P_6	[I know that] Sally believes that John believes that Peter believes that Mary believes that Bill believes that Will is a sailor.	<i>sixth order intentionality</i>
P_n	[I know that] Name _n believes that P _{n-1}	<i>n-th order intentionality</i>

set of mechanisms, routines, and tricks that humans apply to form understandings of other's mindstates as 'mindreading'.

In the past decade, several links have been pointed out between mindreading and literature. Some scholars have suggested that, when forming an understanding of the inner lives of fictional characters, we use the same mental capacities as when reading other people's minds in everyday social interaction (see e.g. Budelmann and Easterling, 2010; Cefalu, 2013; Palmer, 2004; Zunshine, 2006). Others have argued that reading fiction may train our mindreading abilities (e.g. Djikic et al., 2013; Kidd and Castano, 2013; Vermeule, 2010). This fits the broader idea that stories function as cognitive play: they may form a 'playground' where readers can develop various socio-cognitive skills without risking real-life social costs (Boyd, 2009). While the central focus of this article will be on embedded mindstates and the narrative expressed by Shakespeare's *Othello*, we will get back to these more general connections between mindreading and literature in our concluding section.

In various articles and books, Dennett (e.g. 1971, 1987) systematically works out the idea that mindreading has *recursive potential*: it can be self-embedded. In line with the examples he discusses, this can be demonstrated as follows in Table 1.²

The propositions in Table 1 show that the recursive procedure of embedding one proposition expressing a subject's mindstate into another, can produce propositions of any length and complexity. However, these propositions clearly become more opaque and their contents harder to grasp as the number of embeddings increases. This is presumably what led to the idea that there is a general upper limit to the number of orders of intentionality that humans can handle, as suggested by Dennett (1971) and tested experimentally by Kindermann et al. (1998) and Stiller and Dunbar (2007). They argue that the maximum for contemporary humans lies at around fifth order. In their experiments participants were presented with short narratives describing social situations that included several characters:

Emma worked in a greengrocer's. She wanted to persuade her boss to give her an increase in wages. So she asked her friend Jenny, who was still at school, what she should say to the

boss. ‘Tell him that the chemist near where you live wants you to work in his shop,’ Jenny suggested. ‘The boss won’t want to lose you, so he will give you more money’ she said. So when Emma went to see her boss that is what she told him. Her boss thought that Emma might be telling a lie, so he said he would think about it. Later, he went to the chemist’s shop near Emma’s house and asked the chemist whether he had offered a job to Emma. The chemist said he hadn’t offered Emma a job. The next day the boss told Emma that he wouldn’t give her an increase in wages, and she could take the job at the chemist’s instead. (Stiller and Dunbar, 2007: 101–102)

After the narratives were read out to the participants, they were asked questions of increasing complexity, measured by the number of orders of intentionality as expressed through linguistic embeddings. They had to choose, for example, between ‘Emma thought the boss believed that the chemist wanted her to work for him’ or ‘Emma thought the boss knew that the chemist had not offered her a job’ (Stiller and Dunbar, 2007: 102). The level at which participants first failed answering such questions correctly was normally distributed with a peak around fifth order. However, it is not clear what exactly this means: the factor limiting performance at the higher levels was perhaps not so much the participants’ ability to cognitively handle the *situation* presented by the narrative, nor was it the understanding of the *narrative* itself, but rather the participants’ ability to process the multiply-embedded *sentences* of the questions. We suggest that the way mindreading tasks involving MOI are represented is crucial to the actual performance of the subjects facing these tasks.³ In the next section we will take a closer look at the possible ways to represent MOI in language and narrative.

3 Representing embedded mindstates: From sentence to narrative

Within sentences, several linguistic devices are available for coordinating different perspectives (see, for example, Dancygier and Sweetser, 2012; Verhagen, 2005). At least in middle- and western-European languages, a central device is *complementation*, where a verb of cognition (*think, know, intend, etc.*) is specified by a complement clause, as in Table 1. However, if the representation of a MOI situation relies on such complex sentences only, it very soon becomes hard or even impossible for a reader or hearer to make the right inferences about the involved mindstates. Consider P_4 and P_5 in Table 1: these propositions are hard to link correctly to the situations referred to. This is in line with the fact that in corpora of literary narrative and natural spoken discourse, sentences containing three or more embedded mindstates are very infrequent (see also Van Duijn et al., unpublished).

At the same time it is widely accepted that we *do* regularly deal with higher-order mindreading in daily social life (Dunbar, 2003; Sperber, 1994), which suggests that there must be ways to communicate about this linguistically. In our example of Shakespeare’s *Othello*, situations that require higher-order mindreading only emerge gradually in the course of the plot, after several characters have been introduced and several events have been narrated. Nowhere in the text does any single sentence express the embedding of more than three mindstates: only after a while does the situation give occasion to

consider forming such sentences, summarising the state of affairs in terms of embedded mindstates. Dunbar provides such a sentence when he states that audiences watching a performance of *Othello* in a theatre have to work at fourth-order intentionality when ‘they have to *believe* that Iago *intends* that Othello *imagines* that Desdemona *is in love* with Cassio’ (Dunbar, 2008: 414; italics added). Since ‘*is in love* with Cassio’ describes a mindstate without adding another embedding, for reasons of compatibility let us rephrase Dunbar’s sentence as follows:

- (1) [The audience *believe*] that Iago *intends* that Othello *imagines* that Desdemona *thinks* that Cassio is adorable.⁴

This fourth-order proposition does indeed summarise a crucial part of *Othello*’s plot: Iago, ensign to general Othello, determines on revenge after Cassio is appointed lieutenant over his head. He sets up an evil scheme in order to execute his revenge, which involves persuading the freshly married Othello that his bride, Desdemona, is unfaithful to him with the new lieutenant, Cassio.

However, we agree with Dunbar that it becomes more complicated than that. As Iago’s scheming plan progresses, keeping track of ‘who knows what’ (including what they know that others know, etc.) involves reasoning up to at least sixth-order intentionality, following the same logic of counting. In the second act, Iago stage-manages a little riot. As a result, Cassio is discredited with Othello and suspended as a lieutenant. Next, Iago urges Cassio to ask Desdemona to plead with Othello for his (Cassio’s) rehabilitation. In the meantime, Iago fills Othello with suspicion about what Desdemona’s friendly stance towards Cassio means. The resulting situation is advantageous to Iago’s plan: the more ‘helpful’ Desdemona is by pleading for Cassio, the more suspicious and jealous Othello becomes. With this situation on stage the audience would have to work at sixth order:

- (2) [The audience *believe*] that Iago *intends* that Cassio *believes* that Desdemona *intends* that Othello *believes* that Cassio *did not intend* to disturb the peace.

This demonstrates that in the case of *Othello* it is possible to form sentences that in some respect offer faithful summaries of the contents of the plot, and at the same time contain up to six embedded mindstates. The text thus somehow represents (or prompts its readers to deal with) at least sixth-order intentionality. However, as stated earlier: nowhere does the text contain any sentences describing more than three mindstates at a time. This is where narrative takes over.

Dancygier’s (2012) cognitive approach provides an insightful general framework for investigating how narrative texts produce meaning. In her view, texts provide *cues* that invite readers or hearers to make certain *inferences*. The elements that make up the story (events, character actions or traits, landscape’s qualities, etc.) are ‘compressed’ (Dancygier, 2012: 59); that is: only *some* of the actual story’s elements are represented by the text. For this representation, choices on several levels of language usage and narrative structure are made, that subsequently influence how readers or hearers ‘unpack’ the elements and construct the story in their minds.

In order to create what has been termed a ‘fictional mind’, a text provides cues that invite readers or watchers to imagine a (human) agent and attribute mindstates to him/her, using mostly the same mindreading abilities as they also use in actual social interaction.⁵ Both lower-level linguistic choices (such as the use of a first-person versus a third-person pronoun in a sentence) and larger-scale choices on the level of narrative structure (such as telling in retrospect versus following the action as it unfolds) greatly influence the inferences made by readers, and thus the stories these readers construct in their minds (see Dancygier, 2012: 31–40).

In this way, using well-chosen cues, texts can prompt an audience to imagine a fictional social network of characters. As in real life, the audience can apply their mindreading skills to access intentional relationships between characters within this network if the context so requires. In cases such as *Othello* we argue that the process of imagining the right intentional relationships within the fictional social network of characters is *orchestrated* by structural properties of the text. These structural properties orchestrating the audience’s mindreading process are what we will call *expository strategies* in the next section.

To summarise: anyone who knows the content of *Othello* would, upon consideration, admit that the propositions (1) and (2) in a certain way faithfully describe the intentional relationships between the audience and some of the characters. However, the text does not contain such complicated sentences. We argue that with the unfolding of the play’s narrative, readers or hearers are invited to construct a fictional social network and approach it using mainly the same socio-cognitive skills as in real-life interaction. Narrative supports this process through several expository strategies. In the next section we distinguish six such strategies and discuss how they help the audience to construct the characters’ intentional states and process the ways in which they are related and embedded.

4 The expository strategies of narrative

The strategies we distinguish are: characterisation, focalisation/viewpoint alternation, framing, episodic structuring, time management, and redundancy. Their borders are not sharp: some overlap partly, others make use of related underlying mechanisms. None of them can, however, be fully reduced to any one of the others.

Before we discuss the strategies one by one, a few remarks have to be made about the fact that *Othello* is a play. The question of whether it is watched as a performance or read as a text is obviously important to the question of how the audience or readers are being supported in constructing mindstates of characters. Performances provide visual cues such as acted gestures, facial expressions, and proxemics (symbolic use of space; Hall, 1966) that probably trigger immediate responses in spectators. However, in what follows we will refrain from elaborating on the multi-modal experience of watching drama on stage, and restrict ourselves to analysing textual cues, given that *Othello* can be (and widely has been) understood and appreciated perfectly well by accessing its narrative through the reading of the text.

Some of our strategies build on established narratological theory, primarily intended for ‘pure’ narrative texts, such as novels or epic texts. Drama is different in that the

interactions of the characters give the impression that they are unmediated. However, there is no doubt that the reader will come away with a clear sense of a story and a plot, of characters, setting, time, and place. Even though there is no overt narrator in drama, there still is a guiding hand, the theoretical instance situated between the actual author and the story told by the text, who is responsible for the textual choices that provide the reader with the cues to make the right inferences, and who directs their sympathies and antipathies.⁶ All of this warrants the application of various narratological concepts in our following discussion of the strategies.⁷ In addition, we will build on concepts and insights from cognitively oriented linguistics and literary studies, exploiting also their relevance to the processing of characters' mental states.

4.1 Characterisation

Clearly, before a reader can begin to read minds, agents have to be called into being to whom mindstates can be attributed. Only a few cues are needed to get this process started, after which numerous details can be added to adjust and deepen the picture drawn of a character and his or her inner life. Characterisation takes place at two separate though related levels: the *textual* level of the linguistic realisation and referencing of characters, and the *narrative* level at which the construction of characters as meaningful, 'human-like entities' (see Herman, 2009) is situated. Both are relevant to processing of mindstates.

At the textual level, in the case of a play (abbreviations of) the proper names of characters are commonly provided in the left hand margin to indicate who is speaking. Within character text, however, the range of linguistic options available for referencing other characters is endless: it includes proper names (e.g. 'Othello'), nicknames ('the Moor'), definite or indefinite descriptions ('the general', 'a man'), pronouns ('he'), and more. For the purpose of this article two aspects are especially relevant. Firstly, and rather obviously, proper names (or nicknames) can form unique labels that support the readers' memories in keeping different agents and their mindstates apart: 'A person intends that another person believes that again another person loves yet another person', is (even) harder to grasp than the statement that 'Iago intends that Othello believes that Cassio loves Desdemona', whether or not these names had been introduced before. Secondly, and more importantly, proper names can activate so-called 'rich frames' (Dancygier, 2011). A rich frame is a bundle of rather specific background knowledge present in readers, structured such that if one aspect is mentioned, a set of other relevant aspects are also activated. Anyone mentioning 'Mozart' refers to a particular historical person, but also implicitly activates aspects such as 'composer', 'genius', 'fame', '18th-century classical music', 'early death', 'man', and so on. In the case of fictional characters *created* by a text (rather than 'reincarnated' from history or existing stories and myths), the background knowledge contained in the frame associated with their name will clearly be much more rudimentary initially (cueing only, for instance, 'man' or 'foreign'), but as the narrative develops the frame can be enriched very quickly (see also Framing in Section 4.3).

This is where the second level of characterisation comes in, the narrative construction of characters. As soon as the involved minds are 'labeled', attributes can

accumulate. For example, the readers' pictures of Othello and Desdemona will be modified and enriched as they learn in the course of the first act that these two are a respected general with an 'exotic' background and the daughter of a Venetian aristocrat, who got married in secret. With every detail added, each new mention of Othello or Desdemona will activate a richer background knowledge, which in turn enables more profound understanding of the way they think, what their plans are, how they will react, and so on.⁸

Both narrative characterisation and referencing of characters at the textual level are crucial in enhancing *accessibility*, the ease (or difficulty) with which information relevant to successful processing of meaning can be retrieved from memory. In line with Sperber and Wilson's (1986) 'Relevance' principle, Ariel (1990: 165–168) points out that the amount of processing power needed to interpret a linguistic utterance is inversely proportional to the availability of a context in which this utterance makes good sense. Lower accessibility means thus that more processing power will be invested in the search for such a context. Ariel argues that some patterns of referential expression usage focus this search process, so that the reader will need to invest less processing power in order to come to a relevant interpretation. In the example of 'A person intends that another person believes that again another person loves yet another person', and also in the sentences (1) and (2) from Section 3, a handful of agents are prompted, as it were, out of the blue. By contrast, in a concisely constructed piece such as Shakespeare's *Othello* this prompting is both more gradual and more redundant: characters appear on stage and interact, they leave, come back again in other scenes, are addressed by other characters when present, or referenced when absent, etcetera. As a consequence, the core set of characters will attain an increasing degree of presence in the short-term and working memory of the readers, or in Ariel's words: their accessibility increases, hence the amount of processing power needed for interpretation when they figure in a linguistic expression goes down (1990: 11–31; see also Vandelandotte, 2012: 203–207, and our Section 6 on Redundancy).

Finally, some details of character construction are provided by another character, and may therefore be as illuminating about the speaker as about the object of his speech. Consider, for instance, the introduction of Cassio: he is first presented as an 'arithmetician', a 'Florentine', but also as a 'bookish theoretic' whose soldiership is 'mere prattle without practice' (i. i. 19–26).⁹ Although especially the first attributes may seem objective facts, one must be watchful: everything the readers learn here comes from the mouth of Iago, and must thus be considered in the light of his specific interests (see also Focalisation/Viewpoint alternation in the next section). The clearly negative valuation of the details he provides reveal Iago's distaste for Cassio, and thereby provide the reader with another basis for following Iago's wily plans.

In this way, with characters talking to and about each other, readers acquire knowledge of their relationships and stances towards one another; in other words, the readers gain increasing insight in the fictional social network. As in real life, they may start off with only some stereotypical expectations, which are then reinforced, readjusted, or weakened with every new detail mentioned. Against this crucial background of characterisation, more specific character mindstates can eventually be constructed and understood.

4.2 Focalisation and viewpoint alternation

Characters are not just fictional agents allowing the attribution of mindstates, but they also *perceive* the events that constitute the narrative's plot from their point of view. The text orchestrates the reader's inclination to align with the perspective of different characters, and to perceive these events 'through their eyes'. In narratology this is referred to as *focalisation* (Bal, 2009; De Jong, 1997: 313–319), but we take the concept more broadly in this article and extend our interest to the more general usage of all kinds of linguistic cues that mark viewpoint shifts. Elaborating further on Cassio's introduction as an 'arithmetician' and a 'bookish theoretic', it is clear that Iago, who presents this information, is spinning it: his character text prompts the readers at least temporarily to look at a part of the narrated world (in this case, the character Cassio) from his (Iago's) particular viewpoint. This viewpoint is tinged by his jealousy rooted in having been passed over for the military promotion which Cassio received in his place. Through such details provided from Iago's viewpoint, the readers gradually become familiar with his anger. This puts them in the ideal position to correctly interpret his performance when he is asked to explain to Othello the very messy situation in which an inebriated Cassio stabbed Montano. The reader knows that the whole riot leading to this unfortunate event had been set up by Iago himself, but Othello is of course unaware of this when he turns to Iago for enlightenment:

Iago Touch me not so near,
 I had rather ha' this tongue cut from my mouth,
 Than it should do harm to Michael Cassio:
 Yet I persuade myself, to speak the truth
 215 Shall nothing wrong him. Thus it is, general:
 Montano and myself being in speech,
 There comes a fellow, crying out for help,
 And Cassio following him with determin'd sword,
 To execute upon him ...
 (ii. iii. 211–219)

Iago's wily first three lines make him out to be a steadfast friend of Cassio's, one who would rather suffer himself than see his friend come to harm through his words. But surely, Iago puts forward, if he keeps to the 'truth' he will not harm his friend. At this point the readers are in a perfect position to grasp Iago's true attitude and evil intentions: they can take both his point of view and that of the guileless Othello to judge the effect of the lines that follow. Iago's version of the events is 'correct', yet it leads to an exaggerated (as the reader knows) picture of reprehensible guilt of Cassio.

Note that Iago's words include a representation of Cassio's viewpoint (who is 'following [Roderigo] with determin'd sword') – a case of 'embedded focalisation'. Here the text urges readers to do a 'double take' on the event witnessed earlier, but then through the eyes of Iago, and *via him* again through the eyes of Cassio. Through these viewpoint shifts the readers can conclude that Othello, Montano, and Cassio, who were not present when Iago discussed the set-up for the riot with Roderigo, now have a false impression of what just happened, shaped by Iago's sly account (see also Maguire, 2014: 35–38).

In this way, throughout the play the readers take a whole carousel of different viewpoints: they do not have to consider mindstates from the ‘outside’, starting from one fixed perspective, as is the case in multiple-order propositions such as (1) and (2) given earlier, but the text makes them experience these viewpoints, as it were, ‘from within’.

4.3 Framing

Specific details can have a great influence on the impression a reader has of the characters and their mutual relationships. Such details can activate knowledge already present in readers, both general knowledge about the world (for example the scenario of ‘adulterous lady provokes jealous husband’) and more specific background knowledge about elements of a story (for example: ‘Othello is a Moor, so the Venetian aristocrats probably consider him an outsider’). Here, the concept of *framing* is relevant (Coulson, 2001; Fillmore, 1976). Frames bring along a certain *topology*, detailing how informational cues in the new context should be connected and interpreted. Knowledge of particular frames is cultural common ground in readers’ minds. If a frame concerns the behaviour of humans, its topology usually contains ‘stereotypical roles’, information about what characters are likely to do, think, believe, intend, etcetera.

In the course of Shakespeare’s play, the reader is provided with the information that Iago, out of *revenge*, sets up a *wily plot* by making Othello think that his wife, Desdemona, is *adulterous*. These terms all link to well-known frames that come with stereotypical roles, including particular mindstates. For example, in the case of adultery: ‘A and B are married’; ‘A and C are in love’; and ‘A and C do not want B to know that A and C are in love’. By mapping the characters on stage onto the structure of this topology, the reader can make the relevant inferences about intentional relationships without having to process all mindstates from scratch.

Given the benefits of spectator-sight, readers can also witness how one character uses framing to influence another character’s mindstate. Consider again the step in Iago’s scheme where he *intends* Othello to *believe* that Cassio *is in love* with Desdemona and that this love is reciprocated (cf. (1) above). The readers witness how Iago attempts to *reframe* the friendship between Desdemona and Cassio as adultery in Othello’s mind (cf. ‘frame-shifting’: Coulson, 2001). As a result, Othello ascribes different (and false) intentions to Desdemona and Cassio when he watches their contacts and actions. Again, readers do not face the task of processing step by step a completely novel situation: using existing knowledge of the adultery and friendship frames, they can grasp in a more holistic way what is going on in Othello’s mind.

4.4 Episodic structuring

When reading the play, it is clear that it is divided into several more or less bounded episodes. Within such an episode, a relationship between characters can be elaborated, a character can be struck by an idea, change his mind, or acquire an insight. Typically, one episode includes only a limited number of characters: it is mostly either a monologue (such as those given by Iago), a dialogue, or a discussion between a few characters (see also Stiller et al., 2003). The crucial point is that the information provided in any episode

can, as it were, be ‘collapsed’ and conveniently taken to subsequent parts of the play. Here it can be referred to, and embedded into a new structure.

Stories routinely embed earlier episodes by circumscribing them pragmatically, using a key feature of their content or presentation. For example, in the first act Roderigo and Iago spend quite some time discussing why they hate Othello. Later, when Iago needs to convince Roderigo to cooperate (again) in one of the steps of his scheming plan, he only needs to refer to this discussion to reactivate the chain of shared and individual negative experiences with Othello in both Roderigo’s and the readers’ minds. In this way, the play can carefully build up a complex plot by first presenting several episodes that are easy to understand, and then embedding these episodes into one another by calling them up later.¹⁰

To summarise: the fact that the story develops episodically, with each episode updating the mindstates of only a limited subset of the total number of characters, makes it possible that a complex structure emerges in a manageable way.

4.5 Time management

Story time can be managed flexibly through flashbacks or anticipations. Information need not be presented in the actual order of events ‘in the world’: this is the narratological distinction between the order in which events ‘really’ happened (known as the *fabula*) and the order in which they are being told (*story*). In the *fabula* of Shakespeare’s play, for example, Othello and Desdemona get married before the dispute between Iago and Roderigo with which the play opens. However, in the play’s *story* it takes about 200 lines starting from the dispute before the marriage is narrated as a past event. This principle not only opens a possibility for redundant narration (as will be discussed later) but also for calling in past events for clarification or further elaboration.

Events that take years may take only seconds to narrate, and an instantaneous event may be described at extravagant length (see e.g. Schneider, 2003). In this connection some scholars have proposed that Othello contains a ‘double time scheme’ (Ridley, 1965: lxvii–lxx). On the one hand, the main action moves fast: there is a night, a day, another night, and another day on the evening of which the play ends with the killing of Desdemona. This high pace greatly adds to the overall suspense, as well as to the credibility of Iago’s scheme. After all, had there been plenty of time between all of his cunning moves, Othello, Cassio, Desdemona, and Roderigo would have been able to speak to each other, and figure out Iago’s evil intentions. At the same time, however, the rapid movement of the action ‘makes nonsense of the whole business’, as Ridley (1965: lxix) puts it, leaving no time during which the supposed adultery of Cassio and Desdemona could have occurred. Ridley concludes by noting that ‘what Shakespeare is doing is to present, before our eyes, an unbroken series of events happening in “short time”, but to present them against a background of events not presented but implied, which gives the needed impression of “long time” ... He knew to a fraction of an inch how far he could go in playing a trick on his audience’ (1965: lxx). What Ridley calls a ‘trick’, may also be regarded as managing the story time in such a way that the reader is supported in making the right inferences about who-knows-what for the plot to work.

4.6 Redundancy

Finally, there is the aspect of redundancy. Some information is simply provided more than once in the course of the play. Mostly, the repeated information is incorporated somewhat differently, using stylistic variations, shifting points of view, or flashbacks and flash-forwards.

In *Othello*, examples of this can be found in the various soliloquies delivered by Iago. Here he ruminates on what has just occurred and on what is about to occur next. In effect, he rehearses important pieces of information from past and future events for the audience. In fact, this also effects the emergence of a form of drama-internal ‘narrating voice’, offering reflection on the ongoing action (see also Dancygier, 2012: 147–148; Maguire, 2014: 1–4). An example can be found at the end of Act II (II. iii. 305–353): because of the riot that Iago has set up with the help of Roderigo, Cassio has just been suspended as a lieutenant. However, he has no idea that Iago is in fact the evil genius behind his suspension. In a dialogue between the two men, Iago expresses his faked compassion with Cassio, and provides him with a piece of advice on how to regain his position: he should seek the intercession of Desdemona. It starts as follows:

Iago

305 I'll tell you what you shall do. Our general's
Wife is now the general ...

309 Confess yourself freely to her; importune
Her she'll help to put you in your place again ...

Cassio

317 You advise me well.

After this devious advice has been given, Cassio repeats it to himself:

Cassio

320 I bethink it freely, and betimes in the morning will I
Beseech the virtuous Desdemona, to undertake for
Me; I am desperate for my fortunes, if they check me
here.

Then Cassio leaves and Iago remains on stage alone. He begins a monologue, in which he first looks back on the advice he just gave to Cassio:

Iago

And what's he then, that says I play the villain,
When this advice is free I give, and honest,
Probal to thinking, and indeed the course

330 To win the Moor* again? * *i.e. Othello*

How could his advice be considered evil? It is obviously a good way to placate Othello. Of course both he and the reader know better. Iago predicts that Desdemona will be easy to convince:

330 For 'tis most easy
The inclining* Desdemona to subdue**, * 'compliant' ** 'convince'

Next, Iago predicts that Othello will be susceptible to Desdemona's pleas: in fact, she could get him to do anything at all:

and then for her
To win the Moor, were 't to renounce his baptism,
335 All seals and symbols of redeemed sin,
His soul is so infetter'd* to her love, * from 'fetter', i.e. 'chain'
That she may make, unmake, do what she list*, * 'as she thinks fit'
Even as her appetite* shall play the god * 'his desire for her' ('her is objective,
not possessive', Ridley, 1965: 87)
With his weak function.

Then Iago looks ahead to what the next step in his own scheming plan is going to be: he will fill Othello with suspicion about the relationship between Cassio and Desdemona. Meanwhile, he *again* mentions both the advice he gave to Cassio and Desdemona's presumed willingness to go and plead with Othello. And this time it is clear that he is entirely and overtly conscious of the evil nature of his scheme:

How am I then a villain,
340 To counsel Cassio to this parallel course,
Directly to his good? Divinity of hell!
When devils will their blackest sins put on,
They do suggest* at first with heavenly shows * 'seduce'
As I do now: for while this honest fool
345 Plies Desdemona to repair his fortunes,
And she for him pleads strongly to the Moor,
I'll pour this pestilence* into his ear * the 'pest' of suspicion

Finally, Iago tells the reader what he thinks the result will be: the more Desdemona argues in Cassio's favour, the more suspicious Othello will get. This is, obviously, good from the perspective of Iago's true interests and intentions, as it brings him closer to his revenge:

And by how much she strives to do him good,
She shall undo her credit with the Moor;
350 So will I turn her virtue into pitch* * 'tar'
And out of her own goodness make the net
That shall enmesh* 'em all. * 'trap'

This is where Iago's monologue ends. In what follows, Cassio acts upon Iago's advice and asks Desdemona to plead in his favor. Othello turns out to be amenable to this, and Iago indeed manages to fill him with suspicion about why Desdemona is so eager to plead for Cassio's rehabilitation.

Notice that the first of these steps (Cassio asking Desdemona to plead with Othello for his rehabilitation) is presented to the reader as much as five times: once when Iago first gives the advice to Cassio, once when Cassio rephrases the advice for himself, twice in Iago's monologue, and once again when Cassio actually asks Desdemona to go and plead.¹¹

It is clear that *repetition* of cues from which readers can construct the intentional relationships important for the development of the play's plot, increases the ease with which these relationships can be processed cognitively.

5 Conclusions and discussion

5.1 Viewpoint all the way down

We suggested that sentence embedding is well suited for handling two, perhaps three orders of intentionality at a time, but usually not more. For higher orders, narrative takes over. Indeed, Shakespeare's *Othello* uses lower-order sentences to build a narrative that represents the higher-order situations constituting the plot. We argued that narratives such as the one presented in *Othello* provide support and scaffolding for readers' abilities to process multiple-order intentionality by providing cues that prompt them to construct a fictional social network using mainly the same socio-cognitive skills as in real-life interaction. Structural properties of the narrative, here termed expository strategies, orchestrate step by step how the network of intentional relations relevant to understanding the plot should be constructed. We distinguished six such expository strategies: characterisation, focalisation/viewpoint alternation, framing, episodic structuring, time management, and redundancy. All of these can serve the purpose of *viewpoint management*: they impact the text's capability to orchestrate how the reader should navigate through a complex network of embedded and interlinked viewpoints. Whereas this is obvious and well established throughout the literature for the strategy of focalisation/viewpoint alternation, the other strategies have not so far been systematically linked to viewpoint management. Our approach shows how the issue of managing viewpoints pervades in virtually all levels of the text and cuts through the borders of traditionally distinguished categories in narrative theory. This observation also reflects recent developments in the study of language and literature: throughout the past decade scholars coming from various angles and backgrounds have arrived at approaches in which viewpoint (including its cognitive pendant: the mindstate) is the central issue (for a recent overview see Dancygier and Sweetser, 2012; see also Bernaerts et al., 2013; Hühn, Schmid and Schönert, 2009; McConachie and Hart, 2006; Palmer, 2004; Vandelanotte, 2009).

5.2 Context and directions

Our analysis fits into several broader debates. There is increasing evidence that the human mindreading capability has (at least) two layers that function and develop to a certain extent independently: the first layer is mostly in place from birth and is shared with other species in nature; on top of that there are one or more layers that are uniquely

human and develop over a longer period of time (Apperly and Butterfill, 2009). The first layer is mostly associated with ‘sensing’ feelings, directedness, and intentions of others in an immediate, automatic, and irresistible fashion. The second layer is associated with developing a more sophisticated understanding of thoughts and motives, and with appreciating such communicative leaps as irony and sarcasm. It can take up to the age of 12 or 14 before an adult level of understanding other minds has been achieved (Papp, 2006). It has been suggested that the development of the second layer is to a great extent influenced by social interaction and increasing experience with communicative situations, but also by language acquisition as such. Evans and Levinson (2009), for example, conclude that by learning to master the grammatical practice of sentence embedding, children implicitly improve their cognitive skills for interpreting daily-life situations, particularly those involving embedded mindstates. Experiments by Lohmann and Tomasello (2003) further support this: children who are trained in perspective-shifting discourse containing embedded sentences, perform better at mindreading tests than their peers who have been trained in different forms of language use (see also De Villiers and De Villiers, 2003; Milligan et al., 2007). Just as the acquisition of grammar supports the development of social cognitive skills, it is perfectly possible that learning to understand and produce *narratives* also improves a child’s advanced mindreading abilities. This is a promising direction for future research (see also Gallagher and Hutto, 2008).

In addition, the working of our six strategies can be tested experimentally by composing several versions of narrative excerpts, manipulating one strategy at a time, and measuring how well readers are able to process the multiply-embedded mindstates. We also suggest that an empirical approach focused on development and language acquisition would be highly viable, investigating the potential link between the acquisition of the linguistic and narrative features comprised in the six expository strategies and the development of mindreading abilities in children and adolescents. Whereas existing research in this domain has focused on the developmental step from no or very basic understanding of intentionality at age 1–2, to the full appreciation of (false) belief-states at age 4–5 (Milligan et al., 2007), it would be of particular interest to trace the steps beyond that point: those involving higher-order mindreading.

In this article, we focused on the possibility of employing insights from rich traditions in the humanities, such as narratology and the study of grammar and semantics, to contribute to current debates concerning human cognition. This demonstrates how research on such multifaceted topics as mindreading can benefit from the integration of insights and methods from different academic disciplines across both the sciences and the humanities – an example of how EO Wilson’s idea of *consilience* (1998) can be brought into practice.

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Notes

1. Similar examples drawn from different plays, popular culture, and novels can be found in, among others, Dennett (1987), Zunshine (2006) and Corballis (2011).
2. In this article we count orders of intentionality following Stiller and Dunbar (2007), who suggest that one should start from a first-person perspective by default (=first order). If this first-person perspective is not made explicit, it is added between brackets, as can be witnessed in Table 1. Note that fifth order in this article is the equivalent of fourth-order intentionality in Kinderman et al. (1998), who argue, accordingly, that the limit for contemporary humans lies at around fourth order.
3. This is also indicated by the fact that implicit mindreading tests, in which both the descriptions of the situations and the questions are presented in the form of ‘narrative’ movie clips, lead to increased success rates (see O’Grady et al., 2015). In addition, recent experimental findings by Carney, Wlodarski, and Dunbar (2014) indicate that genre impacts on people’s understanding of MOI when reading narratives.
4. The first order, ‘the audience believe’, is added between brackets to indicate that counting starts from that perspective, following Stiller and Dunbar (2007); see also our earlier Note 2.
5. This point is also made by Palmer (2004) and worked out for tragedy in Budelmann and Easterling (2010): inner lives and personalities of characters often remain largely unformulated in a direct sense, but the text ‘model[s] the dynamics’ of the reader’s ‘propensity to read minds’ (Budelmann and Easterling, 2010: 290–292). For case studies dealing with mindreading and tragedy see Helms (2012); Sluiter, Corthals, Van Duijn et al. (2012).
6. We will not go into those passages in which a character becomes a narrator of sorts, as in various soliloquies by Iago in which he comments on past or future events (an example is cited in Section 4.6), or in Othello’s last lines, in which he instructs everyone on stage (and thereby also the audience) how to ‘relate’ the tragic events of the past hours to others (v. ii. 339–357); see also Maguire (2014: 1–4; 19–20).
7. For narratology and drama in the context of our approach see Dancygier (2012: 146–164), and for a more general discussion see Hühn and Sommer (2009).
8. In prints (both ancient and modern), the text is often preceded by a list summing up the *dramatis personae*, followed by a brief description, such as ‘Roderigo, a Venetian Gentleman’ (cf. Ridley, 1965: 2). In this way, this form of characterisation can sometimes even begin before the play itself begins.
9. The used edition of *Othello* is Ridley (1965), also known as ‘Arden 2’. References are to act, scene, and lines (act. scene. line) of this edition.
10. See also Dancygier’s (2012) concept of *narrative anchors*.
11. An acute observer may even find a sixth time in ii. iii. 376–377.

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