Arguing with Stories

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Abstract. Stories can be powerful argumentative vehicles, and they are often used in arguments from analogy, most notably as parables or allegories where the story illustrates an important claim of the argument. Case Based Reasoning in Law has many similar features. In this article, we want to take a further step at computationally modelling the connection between stories and argumentation in analogical reasoning.

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1 Introduction

Stories can be powerful argumentative vehicles: we often persuade not by imparting simple facts and rules, but rather by providing an interesting and convincing narrative. Stories are particularly useful for persuading people by changing attitudes, as in the New Testament parables, or for reinforcing attitudes, whereby the stories illustrate various group cultural norms. Many folktales are of this type, as are many children's stories.

Stories can play an important role in legal argumentation, where one objective is to determine the facts of a case. It is, for example, possible to argue for the truth of a story about "what happened" in a case using evidence, and this story can then be used as the to argue that a particular legal consequence should hold. For example, if we can prove using evidence that Bob drove to Wilma's house to hurt her because she was seeing another man, and that subsequently Bob killed Wilma, we can conclude from this story that Bob committed murder. This combination of stories and arguments has been discussed in recent work on computational argumentation [3][4].

Stories are also often used in arguments from analogy, most notably as parables or allegories where the story illustrates an important claim of the argument. For example, the above-mentioned parables or Plato's allegories are stories which are meant to persuade us of certain ideas by appealing to, or

challenging, our core beliefs and values. Similarly, thought experiments like Searle's Chinese Room, intended to direct the inutitions of their audience are often also presented as a small anecdote or story.

Analogical reasoning, where two stories or cases are compared, has been investigated formally in the field of Case-based Reasoning [5], and ideas from this early work were later on used in approaches to legal CBR (e.g. CATO [1]), which adds argument moves to explore the similarities and differences between legal cases. Recently, we have shown how these argument moves can be applied to non-legal cases (i.e. stories) and how story schemes – generic scripts about how things tend to happen – can be used in this argumentation about similarities [2]. However, it was not fully explained how these stories can be used in a broader argument: that is, why similarities between stories can be persuasive.

In this article, we want to take a further step at modelling the connection between stories and argumentation in analogical reasoning. Section 2 briefly shows how arguments from analogy can be based on stories, and provides a short but illustrative example. Section 3 then discusses some of the objections and difficulties of integrating stories and arguments.

2 Arguments from Analogy

Stories are often used in arguments from analogy. The basic scheme for this type of argument is as follows [10].

Similarity Premise: Generally, case C_1 is similar to case C_2.
Base Premise: A is true (false) in case C_1.
Conclusion: A is true (false) in case C_2.

The critical questions that are given for this basic scheme are as follows.

CQ1: Are there respects in which C_1 and C_2 are different that would tend to undermine the force of the similarity cited?
CQ2: Is A the right conclusion to be drawn in C_1?
CQ3: Is there some other case C_3 that is also similar to C_1, but in which some conclusion other than A should be drawn?

2.1 Story Similarity

The similarity premise and the first critical question are about whether case C_1 and C_2 are similar (enough) for a comparison to be drawn. In [2] a model of story similarity is presented: *stories* are specific sequences of events and *story schemes* are general scenarios consisting of *story roles*, general roles that elements of a story can fulfil. Stories can be matched to schemes by assigning the facts to their respective roles. Two cases are thus said to be similar if they can be matched to the same story scheme. This matching is similar to *mapping* [5]: given a base case and a target case, a mapping consists of a set of correspondences, each linking a particular item in the base with a particular item in the target. The main difference with the matching presented in [2] is that for mapping, both the base and target are usually specific (instantiated) cases, whereas for matching two cases are mapped to each other via a general story scheme. This allows us to match two similar cases C_1 and C_2 even if not every element of C_1 maps to an element of C_2 (as long as the elements of C_1 and C_2 match a story role in the scheme). Note that there are also analogies which do not depend on similarity: in some cases the elements of one story are symbolic for another (e.g. a pen symbolises an author) [6].

As an example of matching two stories, consider the story in Searle's Chinese Room Argument [9]: *there is a man in a room – a Chinese character x is passed to the man– the man looks up x in a book which for each character gives a corresponding meaningful character – the man presents the corresponding character y to the outside*. Using story schemes, we can say that the Chinese room story can be matched to the following story scheme: *enclosed processor – pass language unit to processor – lookup language unit and find corresponding language unit – pass corresponding language unit to outside*. The point is that, even though the "Room as a whole" might (and, it can be assumed, does) pass the Turing test, the man clearly does not understand Chinese. Searle makes this point to then draw the analogy from the Chinese Room to a computer: if you give a Chinese character, or any language unit for that matter, to a computer all it does is perform a lookup operation without understanding the language. It is thus possible to compare a story about a man in a room and a computer by matching both stories to the above scheme.

Legal Case-based Reasoning such as [1] takes a similar approach to [5], but makes the identification of relevant similarities and differences between legal

cases the subject of argumentation. In [2], the focus is on factual stories, which are very similar to legal cases in that both stories and cases present a coherent set of facts. A difference is that in legal cases the elements of the case (factors) are somehow legally relevant, whilst this is not a requirement for stories. Furthermore, elements of time and cause do not feature explicitly in the cases described as sets of factors in [1], whilst these are central to stories. However, despite these differences it is still possible to use the argumentative moves of [1] to explore similarities between stories. For example, one can pose another story as a counterargument to the original story-based argument (see CQ3). In case of the Chinese Room, one is reminded of the original Mechanical Turk, a chess playing automaton in the 18th century. Everyone thought the machine was intelligent until it was revealed to have human operator hidden within it. With this story we can argue that intelligence *is* possible for a machine: no-one disputes the intelligence of the operator of the Turk. While Searle's story shows that we might be misled into thinking mechanical behaviour to be intelligent, the Turk shows that we can still conceive of machines behaving in a way that we would wish to call intelligent.

It is possible for the original story to be told in such a way that possible future critical questions of the type CQ3 are pre-empted. This can be seen clearly in a Parable like the Good Samaritan, which Jesus tells to provide an answer to the question *who is my neighbour?* In the course of the story expected answers (my co-religionists, my countryman) are mooted and dismissed as the priest and Levite pass by one the other side, before the correct answer *any human being who shows compassion* – even my religious and national enemy – is provided in the person of the Samaritan.

2.2 Drawing Conclusions from Stories

The work in [2] mainly focuses on arguments *about* stories: arguments are used to reason about the similarity of multiple stories. However, it is also possible to use *a story as an argument*, that is, propose a story as a reason for some conclusion. This conclusion is referenced to as A in the Base Premise, the Conclusion and CQ2 of the scheme for argument from analogy. So here we have both reasoning about and with stories: first we infer that story C_2 is similar to story C_1 from which previously conclusion A was inferred (reasoning *about* stories, left side of Figure 1). This then allows us to infer A from C_2 (reasoning *with* stories, right side of Figure 1).

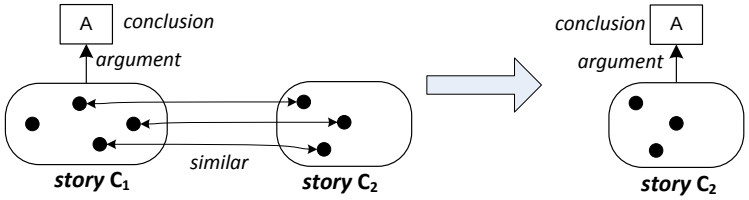

Figure 1: Drawing the same conclusion from a similar story

The question is how to draw a conclusion from a particular story. In legal CBR, there are legal rules and principles that allow us to infer the conclusion from the factors in a case [7]. For stories, we need to look at their *point*. This point can be explicit when it is mentioned in the text of the story, or when the story is told in a dialogue. For example, the Good Samaritan was told in response to a question: the point is then the answer to this question, and answering the question with a story gives rise to an inferential relation between the story and its point. In other cases, it is left up to the reader to infer the point based on their cultural values and beliefs. For example, most people automatically understand the point the fable "the Tortoise and the Hare" to be something like "the more haste, the less speed".

Often the point has to do with a "twist in the tale", which adds persuasiveness to the story. So in Searle's story the system is satisfying the Turing test but then he reveals that there is no intelligence being engaged even with a human inside. In the case of the Good Samaritan the man is helped by one of whom we would least expect it, an enemy. As explained above the twist reveals the desired conclusion after alternative, more expected, conclusions have been raised and rejected, so that CQ3 can be pre-empted.

3 Conclusion

In this paper we have tried to demonstrate the next steps towards a fully integrated account of argument and narrative. We have shown what the role of stories is in argument from analogy, and how such arguments (and their critical questions) can be formally modelled using familiar techniques from CBR.

Argument from analogy preys on the temptation to generalise from limited experience which seems ever present in people, often leading people to state fallacious generalisations. ("Whenever I take an umbrella it does not rain."). In its standard form the argument from analogy is very plain. But stories can

give the analogy more substance and hence more persuasiveness. Also note that often it is not the truth of a story that is at issue; for example Wittgenstein argued that "Christianity is not based on truth; rather, it offers us a narrative and says: now, believe!" [11]. A compelling argument does not necessarily have to be true, especially when it appeals to values (as parables often do).

There remain a large number of open questions regarding the interactions between narrative and argument. For example, how exactly can we derive the point of a story from the story and the context in which it is told? How do different types of stories change or reinforce attitudes? Are stories just a rhetorical "trick" or can they be used to express information that otherwise remains implicit? Providing formal answers to these and other questions is pertinent if we want to fully integrate stories and arguments.

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