Values as the point of a story

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Abstract

Stories can be powerful vehicles of persuasion, because they convince not by imparting facts and rules, but rather by encouraging the right choices through a change in values. In this article I intend to lay the conceptual foundations for a mature theory of stories for value-based argumentation. The article discusses how stories can be used in argumentation, and how values can be seen as the point, or the conclusion, of stories.

1 Introduction

Stories can be powerful argumentative vehicles: we often persuade not by imparting facts and rules, but rather by providing an interesting and convincing narrative. This is particularly important when we are trying to convince others to adopt particular values by which their actions are guided. For instance, it is much more convincing to tell a child the story of *The Boy Who Cried Wolf* instead of simply saying that they should not lie because then even if they tell the truth, no one will believe them. Here, the story is meant to encourage right choices through a change in values rather than through a rule to be followed and thus a value is adopted by the person rather than imposed.

The combination of stories and values in argumentation has been central to the research Trevor and I have performed together since my visit to Liverpool in 2008. With Katie Atkinson [11] we discuss abductive argumentation schemes for arguing about past actions, where values serve as motives for these actions. More recently with Bart Verheij [12] we have looked at how case-based reasoning (CBR) techniques from AI and Law [1] can be applied to arguing with factual stories; thus we implicitly show how factual stories would fit in Bench-Capon and Sartor's [7] CBR model of reasoning with values. However, for various reasons joint work on a full theory of persuasive stories for value-based argumentation has never progressed beyond an exchange of notes and a short paper [9]. In this article I intend to lay the conceptual foundations for such a theory.[1]

[1] Interestingly, my work on the first version of this article for Trevor's Festschrift has given impetus to new work with Trevor on stories and argumentation [10, 6].

In [9], we pose three important questions regarding the role of stories in (value-based) persuasion: (i) What is the relation between arguments and stories? (ii) What are the elements of a typical story? and (iii) When is a story persuasive for a particular person? I will propose tentative answers to these questions, paving the way for future collaborations. The perspective of this article is clearly that of computational arguments, computational narratives and multi-agent approaches to communication. However, formal definitions will be kept to a minimum but possible formalisations will be indicated where appropriate.

2 Stories in Argumentation

Structurally, stories and arguments are different things: a story is a coherent sequence of events, whereas an argument is a reason for some conclusion . However, a story can be used for a variety of different goals: to explain, to entertain, to persuade and so on. Whether a story should be considered as an explanation, as a source of entertainment or as an argument depends not on its structure but rather on the intention of the author or speaker. This idea stems from speech act theory [23]: it is the intention of uttering some locution the illocutionary force of the speech act that determines how the contents of the speech act should be treated. So if a story is told with the intention of persuading or arguing, we can consider it to be an argument, a reason for a conclusion, whereas if it is told with the intention of explaining we can consider it to be an explanation [15]. This is vital, as the criteria by which we judge arguments, explanations or entertainment are wholly different.

In Bex and colleagues' *hybrid theory* [13] arguments are used to reason about stories. The hybrid theory is one of Inference to the Best Explanation (IBE), in which observations are first explained by hypothetical stories and arguments based on evidence are subsequently used to support or attack these stories. For example, a hypothetical story about a shooting can be supported by witnesses stating that it was the suspect who shot the victim. However, the suspect's own denial of the shooting counts as evidence that attacks this story. Ultimately, the objective of IBE is to find the best explanation, that is, the one that is supported by the greatest number of evidential arguments and attacked by the least number of evidential arguments. Figure 1 shows a stylised picture of arguments supporting (closed arrow) and attacking (open arrow) elements in a story.

Another example in which arguments and stories are closely intertwined is in Case-based Reasoning (CBR). The field of CBR in Artificial Intelligence [17] essentially stems from the early work on story understanding [21]. Ideas from this early work were later on used in formal approaches to legal CBR in AI and Law [2, 1]. In this work, cases are collections of factors, stereotypical fact situations with legal relevance, such as *plaintiff was pursuing his livelihood* or *plaintiff was not in possession of the animal* in cases relating to the chase and ownership of game. Recently, the work on CBR has come full circle. Bex and

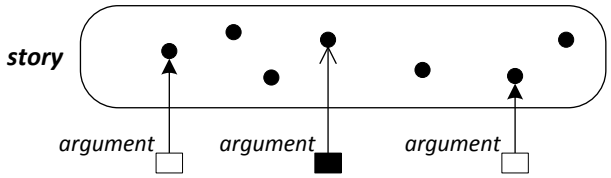

Figure 1: Arguments supporting and attacking a story

colleagues [12] focus on factual stories, which are very similar to legal cases in that both stories and cases present a coherent set of facts; the main difference is that in legal cases the elements of the case (factors) are somehow legally relevant, whilst this is not a requirement for stories. Thus, the argumentative moves of legal CBR [1] can be used to explore similarities between stories in an argumentative way. For example, it can be argued that *Hamlet* is similar to *Cavelleria Rusticana*, as in both stories one man (Hamlet / Turrido) defends himself because he is attacked by another man (Laertes / Alfio). However, this similarity can be countered by arguing that in Hamlet the attacker, Laertes, was acting to avenge the death of his sister Ophelia, whilst Alfio did not have a similar reason to attack Turrido. Figure 2 shows a stylised representation of two such arguments.

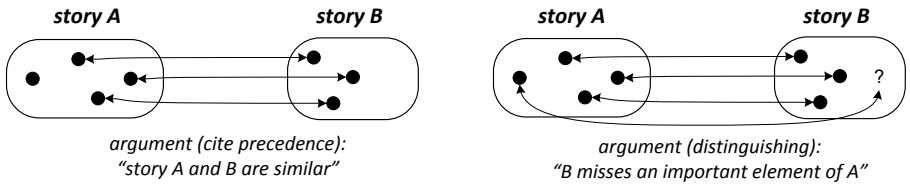

Figure 2: Arguments about the similarity of stories

The work on the hybrid theory and the work on arguments and stories in CBR focus on arguments about stories: in the hybrid theory arguments are used to reason about the truth of a single story, and the CBR approach uses arguments to reason about the similarity of multiple stories. However, as was discussed above, it is also possible to use a story as an argument, that is, propose a story as a reason for some conclusion. In the case of IBE, once the best explanation is inferred, we can infer further conclusions from this explanatory story. For instance, from a factual story containing the elements *S shot V* and *S shooting V caused V to die* we can infer both that *S intended to kill V* otherwise S would not have shot V and that *S killed V*, which together leads to the conclusion that S murdered V. Here the elements of the story serve as the conditions of legal rules [14] and thus as premises to an argument (Figure 3). So in addition to reasoning about stories we can also construct arguments with stories.

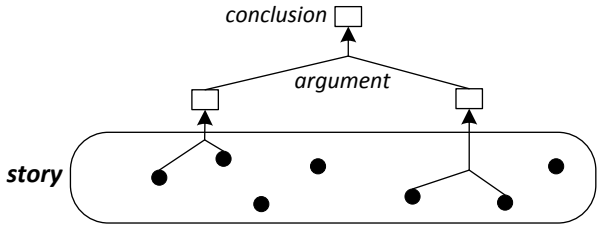

Figure 3: Drawing conclusions from elements in a story

CBR also involves both reasoning about and with stories: first we infer that story B is similar to story A' from which previously conclusion C was inferred (reasoning *about* stories, left side of Figure 4). This then allows us to infer C from B (reasoning *with* stories, right side of Figure 4). In legal CBR, the conclusion C that we want to argue for is typically a legal conclusion. For example, in *Pierson vs. Post*, plaintiff was chasing a fox and defendant interrupted the chase, killing the fox and claiming it. It was concluded that plaintiff had no right to the fox since he had not gained possession of it. A similar case was *Young vs. Hitchens*: in this case plaintiff, a fisherman, was closing his nets when defendant sped into the gap and caught the fish in his own nets. The two cases are similar because in both cases, plaintiff was not in possession of the animals. Hence, by citing Pierson v. Post as a precedent we can draw the same conclusion in Young v. Hitchens, namely that the case should be decided in favour of defendant.

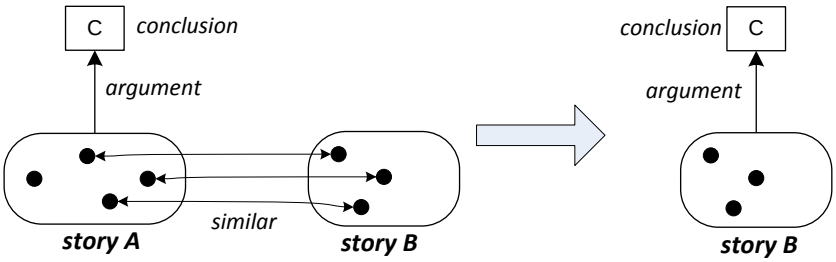

Figure 4: Drawing the same conclusion from a similar story

2.1 Value-based argumentation

Values have been incorporated into formal argumentation frameworks by Trevor [5]. The basic idea is that accepting a particular conclusion promotes or demotes some abstract social or cultural value such as *liberty* or *equality*. In a sense, people's world views can be said to represent an ordering of such values; for example, a Democrat will generally prefer equality over liberty, whilst for a

Republican this will be the other way around. Whenever a person has to choose between competing arguments, they choose the argument that best matches their value ordering, that is, the argument that promotes their favoured value.

Atkinson and Bench-Capon [5, 4] show how discussions about moral issues can be represented as practical reasoning with values. Such arguments are of the following form[2]:

> I have goal G.
> Performing action A in situation S will realise goal G, which will promote some value V.
> *Therefore* I should perform action A.

The idea is that by performing an action and reaching a goal, a value is promoted. For example, if you find a wallet with a large sum of money you can bring it back to its rightful owner (promoting *honesty*) or take out the money (promoting *wealth*). The choice whether or not to perform an action is ultimately governed by one's value ordering (i.e. whether honesty or wealth is preferred).

Atkinson and colleagues' model does not capture reasoning with stories or cases: the premises of arguments are simple propositions. Value-based reasoning with cases has been tackled, however, by [7], who present a model of legal CBR in which combinations of individual factors and decisions promote values. So, for example, if based on the factor plaintiff was pursuing his livelihood we would decide for plaintiff, the value productivity would be promoted. Thus, a case promotes all the values that are promoted by its individual factors. Note that we can essentially consider CBR to be a model of practical reasoning [3], where the action is making a legal decision (e.g. "decide for plaintiff"). In this way, the reasoning in Bench-Capon and Sartor's model can be interpreted as practical reasoning with more complex situations and multiple values: given situation $x_1, \ldots, x_n$, where x_i is a factor, performing action A (deciding for plaintiff or defendant) promotes values $v_1, \ldots, v_n$, where v_i is the value promoted by the combination of factor x_i and decision A.

2.2 Issues for Stories in Value-based Argumentation

The objective of this article is to lay the foundations for a model in which stories can be used to influence the actions of others. The current work on stories and argumentation discussed above shows that stories can form the basis of arguments by providing the conditions for the application of one or more rules, and that these arguments can promote values in the usual way. However, there are a number of open issues.

First, note that the existing approaches mainly use stories to infer legal conclusions such as "the defendant is guilty" or "the case should be decided for plaintiff". The legal rules used to infer these conclusions can be derived from

[2] The exact argumentation scheme used by Atkinson and Bench-Capon is slightly different; here I have adapted it into a slightly abbreviated standard form.

previous decisions (in the case of CBR, 4) or found in legislation (for models that adhere to a more continental legal approach, 3). An important aim is to figure out which non-legal conclusions we want to derive from stories and which inference rules allow us to do so. The work on practical reasoning provides some important basics here: if stories are told to influence the behaviour of others, they can be considered as premises to arguments for practical reasoning. In other words, we might use stories to infer the standard conclusion in models for practical reasoning, namely *action A should be performed*.

One issue with treating value-based reasoning with stories as standard practical reasoning is that current conceptions of practical argument are mostly concerned with specific, goal directed actions (e.g. "stop eating cake", "install speed cameras", "decide for plaintiff"). However, when one tells a story such as a parable or a fable, the objective is often not to influence a single future action but rather the way in which someone lives their life in general. Basically, what one is trying to accomplish by telling a story is a shift in values, a change in someone else's worldview, so the conclusions of arguments based on stories should be the values or value orderings themselves, or at least a more abstract rendition of actions which is not directly aimed at building a plan but rather at providing the basic tenets for how one should live one's life.

Another open question is exactly how stories serve as the premises of arguments for practical reasoning. As discussed earlier, Bench-Capon and Sartor's model (implicitly) uses cases as premises of practical arguments. So, given the similarities between stories and cases [12, 14], it should be possible to model value-based reasoning with stories in a similar way; instead of one case setting a precedent for which legal decision needs to be made in a similar case, a story sets a precedent for how one should behave in a similar situation. What needs to be determined now is which elements of a story cause it to be an argument for or against a particular value. For this, we turn to research on narratives and story points.

3 The Structure and Point of a Story

Since Aristotle's *Poetics*, there have been numerous theories about the elements and the structure of narratives, mainly in literature theory. The first formalisation of the structure of stories came from Vladimir Propp [18], who identified standard event types and structures for folk tales. Following Propp's work, researchers from the field of cognitive psychology and artificial intelligence became interested in story structure, mainly with the aim of defining and automating story understanding. Influenced by the work on generative grammars, researchers such as [20] developed so-called story grammars, which express the structure of stories as a Context Free Grammar. For example, most story grammars divide a story into a series of episodes ($story \longrightarrow episode*$), each of which has a basic goal-driven structure ($episode \longrightarrow setting + goal + action + consequence$). Others, most notably [21], argued that whilst stories consist of goal-driven action sequences, story understanding is more content-driven, in

that more specific information in the form of scripts is used when understanding stories. Scripts model the way things tend to happen in the world; for instance, the restaurant script lists the roles (customer, waiter) and sequence of events (ordering, eating, paying) for a typical restaurant visit.

Wilensky [27] argued against story grammars and scripts, saying that a piece of text can only be a proper story if it has a point. Wilensky distinguishes between external points, goals a storyteller might have when telling a story such as persuading someone or communicating information, and internal points, parts of the story text that generate interest. Wilensky's theory mainly focuses on internal points. As an example of an internal point, consider the following sequence of events: "John loved Mary. He asked her to marry him. She agreed, and soon after they were wed. Then one day John met Sue, a new employee in his office, and fell in love with her". This text has an internal point, that is, there is a dramatic situation that involves goals and the interaction between them. In the example, a new goal (the love for Sue) interferes with an old goal (the marriage with and love for Mary). So, according to Wilensky, the point of a story is a summary of the events that comprise interesting ("dramatic") goal relationships in the story ("John loves someone but is already married to someone else"). Wilensky thus argues that the dramatic content in a story can be found by looking at the relationships between the goals of the various characters. Wilensky's idea of dramatic content, however, can be further generalised by taking into account Schank and Abelson's scripts: often, it is a deviation of the standard script that counts as "dramatic content". In the example, people might expect John and Mary to live happily ever after, as the (original) idea behind marriage is that it lasts "until death do you part". This script-based approach to dramatic content allows for a broader definition of the term. For example, in Searle's Chinese room story [24], the Chinese Room satisfies the Turing test (i.e. it answers questions in a seemingly intelligent way). Our standard script is that if something satisfies the Turing test, it can be said to be intelligent. Searle's dramatic twist is then that there actually no intelligence being engaged even with a human inside [10].

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[3]However, considering the high number of divorces the standard script might nowadays be marriage to A divorce marriage to B divorce. In this case the story would be contain a dramatic twist if John and Mary actually lived happily ever after!

even with a human inside [10].

Schank and colleagues [22] also discussed points in the context of story understanding. They perceive points to be interplay between the speaker's intentions on how the listener should process the story and the listener's ability to correctly process and categorise a story. For example, affective points are meant to change the listener's goals, explanatory points are meant to explain situations, prescriptive points are meant to present the listener with rules, argumentative points are meant to persuade the listener, and so on. These point categories are very similar to the differences in illocutionary force discussed earlier: a story may be told with the intention of explaining, arguing and so forth[4]. Very often, this illocutionary force depends on the dialogical context in which a story is told [19]. For example [6, 25], in the bible Jesus is often asked a question to which he responds with a story, a parable: the story of the Good Samaritan is told to answer the question "Who is my neighbour?", and the story of the Prodigal Son is told in response to the Pharisees negative comments on Jesus' consorting with sinners. Jesus tell these stories with the intention of explaining who can be considered a neighbour, or why he consorts with sinners, and at the same time these stories argue for a particular value or value ordering.

Dorfman and Brewer [16] provide a model in which the point of a story is not a structural characteristic of the story (as in Wilensky's work) or specifically tied to the intention of the speaker (as in Schank et al.'s work). Rather, Dorfman and Brewer argue that the point is a higher level concept, a moral or an "abstract truth". The point of many stories, such as fables, is about whether we should or should not exhibit certain behaviour, for example, "don't be overconfident", "be honest" and so on. The point of the story can be explicitly mentioned in the text, as is often the case for the various renditions of Aesop's fables where the moral of the story is explicitly included. Take, for example, the tale of The Boy Who Cried Wolf, which concerns a shepherd boy who repeatedly tricks nearby villagers into thinking a wolf is attacking his sheep. After a while, a wolf actually does appear, the villagers do not believe the boy's cries for help, and the flock is destroyed. Caxton's medieval version this tale of ends with the explicit point "*For men bileue not lyghtly hym / whiche is knowen for a lyer*".

In many cases, however, the point of a text is not explicit: mentioning the point of a story is often considered to be quite a thought-terminating clich. The question is then how the contents and structure of a story influence its point. Dorfman and Brewer try to answer this question by proposing and testing a model of point comprehension. In this model, readers infer the point or moral of a story based mainly on the positive or negative valence of the story's central action combined with the positive or negative valence of the story's outcome. The central action of a story is the morally significant action of the story; for example, lying in the case of *The Boy Who Cried Wolf* or being lazy and overconfident in *The Tortoise and The Hare*. The outcome describes how the central action was resolved. Actions and outcomes can be perceived as positive or negative (according to Western standards): lying is a negative action, losing

[4]In fact, Schank and colleagues explicitly connect their work to Searle's work.

one's sheep is a negative outcome, being diligent is a positive action, winning a race is a positive outcome. In their experiments, Dorfman and Brewer presented subjects with a variety of short fables. Base fables are the original versions, where positive actions are paired with positive outcomes and negative actions are paired with negative outcomes. Reversed outcome fables were the base fables with reversed outcome valences (e.g. the Hare wins the race), so a positive action is tied to a negative outcome and vice versa. Neutral and no-outcome fables had a non-morally significant central action or no outcome, respectively.

The experiments showed that in the case of base fables, subjects nearly always (95%) correctly understood the moral point of the story correctly, that is, the fable's moral was understood as originally intended. For neutral and no-outcome fables, most subjects (93% and 85% respectively) could not find a point to the story. In the case of reversed-outcome fables, about 60% of the subjects argued that there was no point to the fable. Of the remaining 40%, most subjects (40%) assigned a new, reversed moral point to the story that coincided with the new outcome. For example, in the reversed-outcome The Goose and the Golden Eggs, the farmer kills the Goose, as in the original fable, but instead of losing his source of income is rewarded with a huge sum of gold. The new point assigned by subjects was then something like "greed and impatience are good". However, quite a lot of subjects (30%) replied that the reversed-outcome fable had the original point (e.g. "greed is bad"). This is attributed to the "just-world" hypothesis: people will always believe that good behaviour will or should be rewarded and bad behaviour will or should be punished, even if a story tells them otherwise.

It seems that there are various ideas about what constitutes the point of a story: dramatic story content ("John loves someone but is already married to someone else"), the intention of the author (to argue for fidelity in marriage), morals in the form of a lesson about one should or shouldn't do ("you should not look at other women once you're married"), or perhaps more abstract values one should follow (fidelity).

The dramatic story content and the intention of the author are, in my view, not the point of the story but they play an important part in *establishing* the point of a story. So-called neutral stories, in which there is no dramatic resolution to some central event, are usually regarded as pointless. The intention of the narrator, which can sometimes by gathered from the context, is also important as the above discussion shows. Finally, the knowledge and beliefs of the reader also guide the inference of a point from a story: deeply entrenched beliefs influence the point that people read in a story (cf. the just world hypothesis), and a reader will identify more with a character who is in a similar situation or who has a similar world view. The point of the story is thus the interaction between the structure and contents of the story and the knowledge and beliefs of the reader. The story teller intends the story to have such an interaction and thus change the knowledge and beliefs of the reader in a particular way.

Which knowledge and which beliefs are usual targets of storytelling? This of course depends on the type of story and the context in which it is used in [24], the point of the story is that "Syntax by itself is neither constitutive of nor

sufficient for semantics" or, in other words, being able to manipulate strings of symbols does not mean that one understands the meaning of these symbols. In this article I mainly discuss stories with an explicit moral, that is, stories that are meant to teach us values and influence our behaviour. As indicated earlier, here the interest is not in stories that are intended to influence a rather simple, single action but rather in stories that are aimed at influencing the (order of) the values people believe in and live their lives by.

4 Stories in Value-based Argumentation

In section 2, it was discussed how stories can be used as arguments: if the intention of the speaker is to persuade someone using a story, they can argue for some conclusion by telling a story. As the discussion in section 3 demonstrates, this conclusion will be what is normally called the point of the story: a lesson on how we should live our lives, which values we should strive for. Clearly, these types of conclusions are very close to the conclusion of a value-based practical argument: action A should be performed to promote value V. Note that, as discussed in the previous section, this conclusion is often left implicit, as stories are as much intended to provoke thought as to lay down explicit rules.

The premise of the argument, the reason for performing the action, is in this case the story itself. This story tells us what will happen if and when the action is performed. The following provisional argument scheme for practical reasoning based on stories can now be constructed:

> Character x performs action A, which promotes (demotes) value V, and gets positive (negative) results
> *Therefore* I should (not) perform action A, promoting (demoting) value V.

The premise is the story, in which a character performs an action and gets a certain positive or negative result, promoting or demoting a value. For example, the boy lies about the wolf, demoting honesty, and gets negative results, namely none of the villagers help him when the wolf does turn up. From this story, we can conclude that we should not lie.

The above scheme presents a generic situation, in which a story is told and we expect people to accept the conclusion. Whilst we can expect that, given a story, people can infer the conclusion that they should exhibit certain behaviour, it is certainly not clear that people can be persuaded just by giving them a story. Persuasion requires a person to somehow identify with the character in a story. As an example, consider the parable of the Prodigal Son (Luke 15:11-32). In this story, a father gives the younger of his two sons his inheritance before he dies. The son goes off and wastes his money, but after a while goes hungry during a famine. The son repents and returns home, where the father holds a feast to celebrate his return. The older son is angry that the father holds a big feast for his wasteful sibling, stating that he never got such a feast even though he always obeyed his father and worked hard. The father reminds the older son that everything the father has is the older son's, but that they should

still celebrate the return of the younger son as he has come back to them. As a young student, identifying with the younger son, one might take from this story that it is not forbidden to make mistakes, as long as you can later see the error of your ways. As a father, one might see this story mainly as a tale of forgiveness: no matter what your children do you should always forgive them.

So a story sets an example by having the listener or reader identify with one of the characters. More precisely, the story acts as a precedent for the current situation and thus, arguing with stories takes the form of Case-based Reasoning, as described in section 2.2:

> Character x performs action A, which promotes (demotes) value V, and gets positive (negative) results
> I am in a similar situation as character x
> *Therefore* I should (not) perform action A, promoting (demoting) value V.

This scheme effectively combines practical reasoning and argument from analogy. A similar scheme is Walton and colleagues' [26] scheme for practical reasoning from analogy, which says that if in situation S, action A is the right (wrong) thing to do and S' is similar to S, then in S' one should (not) do A. The scheme proposed here is a more detailed version of this scheme, focusing on how people are persuaded by stories. Furthermore, the idea of story similarity has recently been explored in [12]. This work builds on the idea of story schemes [8] generalised patterns of events akin to scripts [21] for comparing stories: two stories are relevantly similar if both are an instance of the same story scheme.

The conclusion of the above scheme, however, still points to a specific action, whereas we want stories to influence the (orderings of) values others use to live their life by. This more general effect of arguments based on the above scheme also influences the relation of these argument to the kind of value orderings proposed by [5]. Where in standard practical arguments value orderings are meant to allow us to choose between competing arguments, arguments following the above scheme are meant to influence precisely these value orderings: values attached to actions that lead to positive results should be preferred to values attached to actions that lead to negative results. So we could further rewrite the scheme as follows, focusing on the values instead of the actions.

> Character x performs action A, which promotes (demotes) value V, and gets positive (negative) results
> I am in a similar situation as character x
> *Therefore* I should (not) prefer actions that promote (demote) value V.

5 Conclusions and future work

In this article, I have discussed the role of stories in argumentation and how the content of stories and their structure influence the arguments based on them. I have shown that by combining ideas from practical and case-based reasoning, a simple argumentation scheme can be constructed that captures, in my opinion,

the essence of story-based persuasion. Because the work clearly builds on existing formal approaches to CBR and practical reasoning, further formalising and integrating it with these approach should be fairly straightforward.

There are, however, still a number of issues that are somewhat harder to solve. Simple stories such as Aesop's fables usually have one protagonist and a clear action-outcome structure. However, when we start looking at, for example, parables things start getting more complex: the Prodigal Son has three important actors, each with his own behaviour and set of values. Furthermore, the positive or negative outcome is only one way to determine the point of a story. In the fables, the outcomes are quite clearly positive or negative. In Biblical parables, they are less so: is the party really a positive outcome for the older son? In such cases, the actual point of the story (i.e. the value promoted) is often more dependent on context, intention of the narrator and expectations of the hearer. In addition, more complex stories do not necessarily convince because the hearer is in a similar situation, but rather they convince by evoking an emotion. For example, the parable of the Good Samaritan is not just meant to persuade people to help persons who have been robbed and beaten, but rather to show mercy and compassion in all relevant situations.

In sum, two important questions for future research are: (i) how do we find the point of a story, the conclusion for which it argues?; and (ii) why exactly are some stories convincing and others not? I have tentatively answered these questions for simple fables in this article, but for parables things start getting more complex, and full-length novels seem almost impossible to analyse thus. This is not a problem that is exclusive to the formalisation of stories and story-based reasoning, however; much of the work in computational argumentation, whilst mathematically and formally sound, does sadly not transcend the basic examples of flying penguins and Quaker presidents. When looked at from this perspective, stories add a great deal to a more knowledge intensive and realistic theory of argumentation.

A related question, one that is often presented with respect to stories in argumentation, is: why exactly should we use stories in formal argumentation? Are they not simply a different and sometimes confusing way of representing knowledge that can also be summarised as a simple sentence? Why should we tell the whole story when we can just use the argumentation scheme from section 4? Admittedly, stories are more interesting to read and more thought-provoking than fairly dry, rule-based if ... then ... arguments. However, of what use is this in situations aimed at automated reasoning? A software agent will not be more easily persuaded by a beautiful story than by a simple rule. And what about the dangers of stories? We are all familiar with the idea that, for example in court, a well-told story can trump a solid and strong argument. Summarising: are stories not just a rhetorical device, interesting to study when looking at informal argument, rhetoric and human communication but of no direct use in artificial intelligence models?

In this regard, it is (again) instructive to consider the similarities between reasoning with stories and reasoning with legal cases. Legal cases often have a so-called *ratio decidendi*, which consists of the rules of law or the reasons given

to justify a decision in a case. In a sense, the ratio decidenci can be viewed as the point of a legal case: what does it mean to choose one decision over another? As [7, 25] mention, there are essentially two camps in the debate as to whether the ratio should be seen as being explicitly given (i.e. by an explicit argumentation underlying the decision) or whether the ratio decidendi is implicit and can be considered as flowing naturally from the facts of the decision and its outcome. We can also adhere to the second viewpoint when considering the points of stories: the point follows quite naturally from a coherent story and the hearer's interpretation of it. A computational theory of human argumentation (or, more broadly, of human intelligence) needs a concept of stories and story-based reasoning because storytelling and understanding are central [28]. As an intelligent person with an almost unmatchable capacity for absorbing and using a wide variety of stories, I suspect that Trevor will agree with this and I look forward to continuing our work for years to come.

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