Argument from Analogy in Legal Rhetoric

Douglas Walton CRRAR

Abstract

This paper applies recent work on scripts and stories developed as tools of evidential reasoning in artificial intelligence to model the use of argument from analogy as a rhetorical device of persuasion. The example studied is Gerry Spence's closing argument in the case of Silkwood v. Kerr-McGee Corporation, said to be the most persuasive closing argument ever used in an American trial. It is shown using this example how argument from analogy is based on a similarity premise where similarity between two cases is modeled using the device of a story scheme from the hybrid theory of legal evidential reasoning (Bex, 2011). It is shown how the rhetorical strategy of Spence's argumentation in the closing argument interweaves argument from analogy with explanation through three levels.

Argument from analogy is known to be fundamentally important in the system of common law because that system is based on arguments from precedent in which a previous case is compared to a current case on the basis of a perceived similarity between the one case and the other (Ashley, 1988; Brewer, 1996). How legal argumentation is based on argument from precedent, in turn based on argument from analogy structured by the argumentation scheme for argument from analogy in case-based reasoning, has been studied (Ashley, 2006; Walton, 2010). The analysis of the logical structure of argument from analogy has been carried forward in that research using an argumentation scheme that has one premise stating that one case is similar to another (Walton, Reed and Macagno, 2008). The notion of similarity was analyzed using the device of a story or narrative, modeled in artificial intelligence as a script, a sequence of events or episodes in a particular case familiar to an audience on the basis of common knowledge (Walton and Macagno, 2006) about the way things generally work in kinds of situations familiar to that audience (Schank and Abelson, 1977). How argumentation based on argumentation schemes can be combined with scripts and stories to study evidential reasoning in law has also now been extensively studied (Bex and Prakken, 2010; Bex, Bench-Capon and Verheij, 2010; Bex, 2011). This paper applies these recent developments in artificial intelligence, argumentation and story-based reasoning to legal rhetoric.

In this paper, Gerry Spence's closing argument in the Karen Silkwood case is used to illustrate a theory about the use of analogy in persuasive legal rhetoric. Section 1 outlines the the closing argument by Spence, the plaintiff in a trial in which the Kerr-McGee Corporation was sued for the death of Karen Silkwood by radiation poisoning. This closing argument is said to be "as fine a closing argument as has ever been delivered in an American courtroom" (Lief et al, 1998, 123-124). Section 2 explains how the argumentation scheme for argument from analogy works, and how it applies to the particular argument from analogy used in the Silkwood case. Section 3 briefly surveys the use of scripts and stories in artificial intelligence to model legal reasoning. Section 4 offers a brief outline of recent work in cognitive science on scripts and stories. Section 5 applies the technology of scripts and stories showing how it was combined with argument from analogy in the rhetorical strategy used so successfully as a persuasive device in the closing argument of the Silkwood case. Section 6 presents and replies to some objections to the theory, and poses some questions for further research. Section 7 summarizes the research contributions of the paper.

1. The Closing Argument in the Case of Silkwood v. Kerr-McGee Corporation

This case is a very famous one, and much has been written about it. A brief outline of the main facts is given here, but the reader can find more detailed accounts in (Lief at al., 1998, 119-157) and (Rashke, 2000). Rashke has reconstructed the Karen Silkwood story from 11,000 pages of trial transcripts, 6,000 pages of pre-trial depositions, 2,000 pages of FBI documents, and 1,600 pages of Congressional transcripts. The basic facts of the case are the following. Karen Silkwood was a chemical technician who worked for the Kerr-McGee Corporation in their nuclear power plant in Oklahoma. Her job was to grind and polish plutonium pins used to make fuel rods for nuclear reactors. Active in union activities, she investigated health and safety issues at the plant. She had testified for an Atomic Energy Commission that Kerr-McGee had violated health and safety regulations and falsified inspection records. On November 5, 1974 she discovered that she had been exposed to dangerously high levels of plutonium radiation on her right hand, left wrist, upper arm, neck, hair and nostrils (Lief et al., 1998, 120). High levels of radioactive contamination were found in her apartment. She was sent to Los Alamos Scientific Laboratory, where they documented evidence of radioactive contamination. After her return she arranged to meet a reporter from the *New York Times* to say that safety and quality controls at Kerr-McGee on the making of the fuel rods had been falsified. On the way to the meeting, she died in a mysterious one-car accident. Silkwood's apartment was quarantined, and her personal property from it was buried in a nuclear waste site (Meyer, 2002, 235). It took three months to decontaminate the apartment (Lief et al., 1998, 121). Her father brought an action against Kerr-McGee in which the chief attorney, Gerry Spence, argued that the contamination had occurred at the plant. Her father sued Kerr-McGee for over $10 million on behalf of her children and family.

In the trial (item 1 in the list below) and the six appellate rulings that followed, Kerr-McGee claimed that Karen Silkwood had contaminated herself in an attempt to discredit the company, arguing that she was a troublemaker who might have poisoned herself (Lief et al., 1998, 122). There was a series of seven trials, listed below.

1. Silkwood v. Kerr-McGee Corp., 485 F.Supp. 566, 10 Envtl. L. Rep. 20,708, 5 Fed. R. Evid. Serv. 765 (W.D.Okla. Aug 18, 1979) (NO. CIV.A. 78-0888-THEIS)
2. Decision Affirmed in Part, Reversed in Part by Silkwood v. Kerr-McGee Corp., 667 F.2d 908, 12 Envtl. L. Rep. 20,367 (10th Cir.(Okla.) Dec 11, 1981) (NO. 79-1894)
3. Jurisdiction Postponed by Silkwood v. Kerr-McGee Corporation, 459 U.S. 1101, 103 S.Ct. 721, 74 L.Ed.2d 948 (U.S.Okla. Jan 10, 1983) (NO. 81-2159)
4. Judgment Reversed by Silkwood v. Kerr-McGee Corp., 464 U.S. 238, 104 S.Ct. 615, 78 L.Ed.2d 443, 20 ERC 1229, 14 Envtl. L. Rep. 20,077 (U.S.Okla. Jan 11, 1984) (NO. 81-2159)
5. Rehearing Denied by Silkwood v. Kerr-McGee Corporation, 465 U.S. 1074, 104 S.Ct. 1430, 79 L.Ed.2d 754 (U.S.Okla. Feb 27, 1984) (NO. 81-2159)
6. On Remand to Silkwood v. Kerr-McGee Corp., 769 F.2d 1451, 23 ERC 1166 (10th Cir.(Okla.) Jul 31, 1985) (NO. 79-1894)
7. Certiorari Denied by Kerr-McGee Corporation v. Silkwood, 476 U.S. 1104, 106 S.Ct. 1947, 90 L.Ed.2d 356 (U.S.Okla. May 05, 1986) (NO. 85-946)

This paper will focus on the decision in trial 4, and on one particular phase of the argumentation in that trial, the closing argument of prosecuting attorney Gerry Spence.

To understand this trial and the argumentation in it, the reader has to know about the basic idea behind the law of strict liability. The purpose of strict liability law is to prevent unnecessary injuries and property damage. The rationale is that if someone is engaged in a dangerous activity, for example using explosives for demolition, he is held to a higher standard of responsibility for

taking care for any damage or injury that might be caused by that activity. For example, if someone is keeping a dangerous animal like a bear or lion, because this kind of animal is regarded as more dangerous than usual, for example more dangerous than keeping a dog or cat, the owner can be strictly liable if the animal escapes confinement and causes harm to some person. Strict liability is also applicable to product liability lawsuits. In a normal lawsuit of this kind, the plaintiff has to prove that the defendant was negligent, in addition to proving that the defendant's product caused an injury. However in a strict liability case, proof of negligence is not necessary. The plaintiff only needs to prove that the product caused the injury.

Meyer (2002) showed how Spence transformed his evidentiary argument into a story by using a rhetorically persuasive analogy in his famous closing argument. The trial began in March 1979 and took 11 weeks. The jury returned a verdict for $10,505,000, and when Kerr-McGee appealed, punitive damages were settled at $1.38 million (Meyer, 2002, 235). Spence used a rhetorical strategy of comparing the Silkwood case to a familiar kind of example from the history of English common law often used to illustrate strict liability. In this example someone was keeping a lion in a cage on his property when the lion escaped, through no fault of its owner, and attacked some people.

The whole closing argument can be found in (Lief et al., 1998-127-157). The key part of Spence's closing argument where he employed the lion analogy in an argument that is the subject of this paper is quoted below from (Lief et al, 1998, 129).

Well, we talked about "strict liability" at the outset, and you'll hear the court tell you about "strict liability", and it simply means: "If the lion got away, Kerr-McGee has to pay". It's that simple – that's the law. You remember what I told you in the opening statement about strict liability? It came out of the Old English common law. Some guy brought an old lion on his ground, and he put it in a cage - and lions are dangerous - and through no negligence of his own through no fault of his own, the lion got away. Nobody knew how - like in this case, "nobody knew how". And, the lion went out and he ate up some people - and they sued the man. And they said, you know: "Pay. It was your lion, and he got away". And the man says: "But I did everything in my power - I had a good cage - had a lock on the door - I did everything that I could - I had security - I had trained people watching the lion-and it isn't my fault that he got away". Why should we punish him? They said: "We have to punish him - we have to punish you - you have to pay". You have to pay because it was your lion - unless the person who was hurt let the lion out himself. That's the only defense in this case: unless in this case Karen Silkwood was the one who intentionally took the plutonium out, and "let the lion out", that is the only defense, and that is why we have heard so much about it.

The use of this explanatory approach by Spence to use the lion analogy to illustrate the sophisticated legal theory of strict liability made the jury able to understand the theory in a way that advanced his case (Lief et al., 1998, 125). Argument and explanation were interwoven masterfully. Meyer (2002, 239) tells us that Spence referred many times to the story of the lion who got away throughout his closing argument and that this was part of his strategy. Meyer tells us that when Spence prepared the case, he outlined the story he wanted to tell in a notebook, and on the opposite page in he wrote a "slogan" that stood for his entire argument: "If the lion gets away, Kerr-McGee has to pay". From reading the key passage above in Spence's closing statement, one can appreciate how artfully he employed this theme in his argument.

Another aspect of Spence's argument is his following up of his presentation of the lion analogy with a very clear explanation of how the rule of strict liability transfers from the argumentation in the lion case to the case at issue in the next part of his closing argument, quoted from (Lief et al, 1998, 129).

Strict liability: "If the lion gets away, Kerr-McGee has to pay", unless Karen Silkwood let the lion loose. What do we have to prove? Strict liability. Now, can you see what that is? The lion gets away. We have to do that. It's already admitted. It's admitted in the evidence. They admit it was their plutonium. They admit it's in Karen Silkwood's apartment. It got away. And, we have to prove that Karen Silkwood was damaged. That's all we have to prove. Our case has been proved long ago, and I'm not going to labor you with the facts that prove that. It's almost an admitted fact, that it got away, and that she was damaged.

This follow-up exploitation of the analogy by Spence will turn out to be very interesting for us to analyze, because it shows how he used the lion analogy to map out a highly persuasive rhetorical strategy woven through his argumentation in the entire trial.

2. Argument from Analogy

The literature on argument from analogy is abundant (Guarini et al., 2009), because it is a fundamental type of argument to study and because so much of our reasoning in many fields is based on it, most notably in law (Brewer, 1996, Ashley, 2006). There are two schemes for argument from analogy (Walton, 2010). The basic scheme has a premise stating that two things are similar to each other. The version of the basic scheme for argument from analogy from (Walton, Reed and Macagno, 2008, 315) is presented below.

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.

An argument fitting this scheme can be evaluated by asking one or more of the following set of critical questions.

CQ_1: Are there respects in which C_1 and C_2 are different that would tend to undermine the force of the similarity cited?
CQ_2: Is A the right conclusion to be drawn in C_1?
CQ_3: 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?

The other scheme for argument from analogy does not use the notion if similarity. Instead it compares specific respects in which two cases are similar (Gurarini, 2004).

Respects Premise: Case C_1 is similar to case C_2 in a certain respect.
Base Premise: A is true (false) in case C_1.
Conclusion: Support is offered to the claim that A is true (false) in case C_2.

The second scheme is especially useful for case-based reasoning. For example the HYPO system (Ashley, 1988) evaluates argument from analogy using an ordering of values that move along a scale with a range of values that support the argument at one end and detract from it at the other end. CATO (Aleven, 1997) is based on factors representing respects in which one case is similar to or different from another. As opposed arguments are put forward in a case, evaluation of the argumentation proceeds by weighing the arguments on each side by judging which factors are

more "on-point", or relevant. The second scheme becomes applicable when carrying out the task of evaluating an argument from analogy once arguments attacking it have been put forward during the argumentation stage of a case. In this paper we will only be concerned with seeing how the argument from analogy put forward by Gerry Spence has persuasive impact when it was put forward during his closing argument in the trial. For this purpose we need to use only the first scheme.

Arguments from analogy always work by matching the target case with a source case, drawing a particular conclusion in the source case, and then by exploiting a transfer effect argue that the comparable conclusion is to be drawn in the target case. Figure 1 shows how the basic outline of this strategy of argumentation works in the closing argument of Gerry Spence in the Silkwood case. The basic situation shown on the left in figure 1 in the source case is simple and graphic. A lion escaped from its cage and attacked some people who were harmed. As the jury was instructed in the Silkwood case, and as they were often reminded in the argumentation of Gerry Spence, the case is one where strict liability is applied.

As shown in figure 1, there are matching propositions in the target case in both instances based on similarity. When the conclusion is drawn in the source case that the lion owner is liable, then by a process of transference, the audience draws the conclusion in the target case that McGee Corp. is liable. Hence we can see that there is a similarity relationship between two key propositions in the argumentation of both the source case and the target case. In broad outline therefore, we can see how the argumentation in the source case is mapped onto the argumentation in the target case to generate a particular conclusion in the target case. But in this paper we will argue that there is a deeper analysis of the similarity between the two cases that reveals the structure of the argumentation underlying the persuasive impact of Spence's rhetoric in an even deeper way.

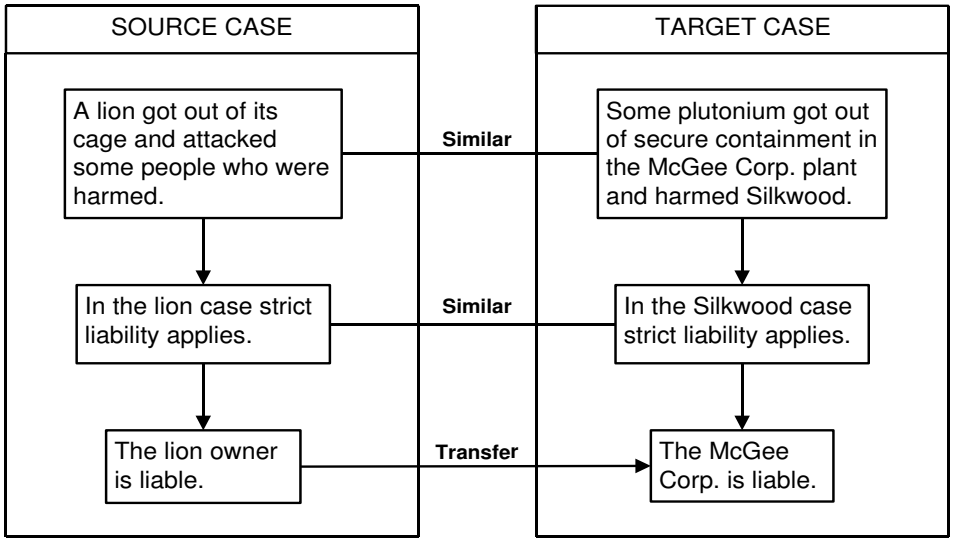

Figure 1: Transfer of Similarity from the Source to the Target Case

Looking at the first premise of the first argumentation scheme for argument from analogy above, the similarity premise, we see that it rests on a similarity drawn between two cases. But what is the nature of the similarity between the two cases that makes the first premise so

persuasive? Is it just that there is a kind of immediate gestalt perception on the part of the audience that the two cases are similar? Is it, as shown above, that some propositions in the source case are similar to comparable propositions in the target case? Or is there even more to it than that? Here it will be argued that there is a deeper similarity between the story as a whole in the source case and the story as a whole in the target case that accounts for the persuasive impact of the argumentation.

3. Scripts, Stories and Similarity

Pennington and Hastie (1993) analyzed many trials and showed that juries reach a decision on which side has the more persuasive argument in a case by assessing the two competing stories told on both sides. The structures that they used to represent the evidence-based decision-making by juries are called stories of the kind that represent recurring patterns in kinds of actions and events that we encounter every day in our human experience. On their theory, stories are organized into units called episodes that represent our knowledge as human agents about action sequences in the world. Their work was based on earlier research in cognitive science (Schank and Abelson, 1977) that model how common knowledge is used in everyday reasoning through so-called scripts representing sequences of actions and events of kinds we are all familiar with in everyday life. The following ordered nine-step sequence is the canonical example: 1. John went into a restaurant. 2. John sat at a table. 3. A waiter gave John a menu. 4. John ordered a steak. 5. The waiter served the steak to John. 6. John ate the steak. 7. The waiter gave a bill to John. 8. John gave some money to the waiter. 9. John left the restaurant. We can all understand this script because of our common knowledge (Walton and Macagno, 2006) about the way things normally happen in kinds of situations we are familiar with in everyday life. Pennington and Hastie (1992, 190-191) found that five factors determine the acceptability of a story. 1. The greater the story's coverage of the evidence presented at trial, the more acceptable the story is as an explanation of the evidence. 2. Coherence of the story includes consistency and plausibility. 3. Plausibility is enhanced by the consistency of the story with knowledge of events taken to be real. 4. Uniqueness, another factor, means that if there is only one coherent story, that story will be accepted. 5. In a case where there is more than one story, the competing stories need to be compared to judge which is the best explanation of the facts. Using stories is an alternative to the more standard approach of using only arguments to make sense of evidence and arrive at a conclusion. Stories are not themselves arguments, but represent explanations of a given set of facts that enable the facts to be linked to each other and made into a coherent whole.

The script-based approach to analogy is different from the older work on analogy of Gentner (1983) and Holyoak and Thagard (1989), even though both approaches are based on a technique of structure mapping between two cases (Falkenhainer, Forbus and Gentner, 1989) that is alleged to represent the similarity between two cases that is the basis of an argument from analogy. In this older work, a structure mapping engine is applied to implement the notion that analogy is a mapping of knowledge from the base case to a target case. A structure mapping engine of this sort is based on sets of matchings between pairs of predicates and functions that map a source case to a target case. In structure mapping theory, it is not just the matching between single items in the source case with single items in the target case that is the basis of the analogy. Rather it is the larger structure into which this sequence of matchings fits together in an overarching structure. In this respect, the structure mapping approach is similar to the script-based theory of analogy. But here the comparison ends.

The script-based theory of similarity needs to be seen as not based on matchings between pairs of predicates or functions. Instead, the similarity is based on common knowledge that the participants in an argument share (Walton and Macagno, 2006), including the audience to whom the argument was directed, so that something that is unfamiliar to that audience can be explained to them by comparing it with something they are familiar with. Such an explanation is a transfer of understanding by matching up a sequence of events or actions (Goldman, 1970) representing the thing the way things can normally be expected to occur in of familiar kind of situation to a different kind of situation that is less familiar.

Branting, (2003) has built a reduction graph model of legal precedent based on mappings of structural similarity between cases that can be seen as a way of representing arguments from analogy. He presents an example (2003, 65) where Adams and Baker are two players in hockey game, and Adams intentionally hit Baker's hockey stick to keep Baker from hitting the puck. Baker, who suffered an injury to his hand resulting from the blow, sued Adams for battery. Adams argued that there was no battery because he didn't hit Baker, only Baker's stick. An issue was whether Baker implicitly consented to the contact because this kind of contact between sticks is common and hockey games. Branting (2003, 67) compares the argumentation in this case to other cases that are similar. For example, in a precedent case, Clark v. Dexter, Clark was held liable to Dexter for battery because he punched Dexter on the chin during a family argument. The sequence of events in one case is similar to that in the other, but there are also some differences. One is that in the family argument case the one party hit the other party directly, touching him, where the touching resulted in an injury. In the other case there was no direct contact between the parties. One used his stick to touch the stick of the other.

Branting's reduction graph model shows argument from precedent based on relevant similarities in a way that makes it appear to be comparable to the script-based method of analyzing argument from analogy in the present paper. For example, in his hockey case there is a sequence of events: Adams hits Baker's hockey stick, Baker's hockey stick twists his hand, Baker suffers an injury to his hand. One can then compare the family argument case and see that the middle event is missing. Instead of the second party's stick being hit, the second party is hit directly by the first. The case is interesting from the point of view of the script-based theory because the hockey sequence includes the family argument sequence, but leaves out one step in the sequence. Thus the sequences represent a partial similarity with an important difference. There is another difference as well, because the situation of hitting in hockey needs to be argued about in a different context from that of the family argument case.

Bex (2011, 59) calls such a story a causal structure, because it contains implicit causal relations assumed by the reader of the story that enable the reader to connect the sequence as a series of events and actions that make sense. We can recognize it as a story, even though not all the events and causal relations have been rendered explicitly. However, in this paper, the notion of a story will be defined in a broader way that comprises not only causal relations, but other kinds of relations between actions and events as well. Examples will be given below.

It is a problem noted in (Wagenaar, van Koppen and Crombag, 1993) that in some cases a more plausible story may not be well supported by the evidence while a less plausible story may be better supported by the evidence. The problem is how a jury should choose between these two alternatives. To solve this problem they devised an abstract model of a story called an anchored narrative, which models a story as a sequence of events at one level, while on a second level there can be evidence in the form of arguments that support or attack parts of the story. (Bex, 2011) constructed an artificial intelligence hybrid system that combines explanations with

arguments in an abstract model of legal reasoning, mainly in criminal cases but that can also be applied to civil cases. On Bex's theory, a set of events or actions in a story is derivable from the events through a process of applying abstractions, linking particular events in a story to their representation at a more abstract level by what is called a story scheme (Bex, 2011, 127).

In this paper we extend Bex's model to analyze the notion of similarity used in the basic argumentation scheme described above for argument from analogy. On Bex's theory, stories are specific sequences of events or actions familiar to common knowledge, whereas a story scheme is an abstract representation of a story that contains statement functions with variables that act as placeholders for individual persons, actions and events in the story. For example, 'Bob shot Ed.' could be part of a story, whereas the abstract story scheme component '*x* shot *y*' is a statement function containing two variables. When applying the theory a distinction needs to be drawn between the sequences of statements that make up a story, and the sequences of statement functions that make up a story scheme. This distinction will be centrally important to explain the persuasiveness of the argument from analogy used by Gerry Spence in his closing statement in the case of Silkwood versus McGee Corp.

4. Scripts and Stories in the Argument from Analogy

The nature of the similarity between the two cases can be brought out by analyzing each case as a sequence of events of a kind that would be easily familiar to an audience on the basis of common knowledge about the way things can be expected to normally go in situations of the kind encountered in everyday life (Walton and Macagno, 2006). The sequence is that we have something very dangerous and potentially harmful that needs to be secured to prevent the danger of harm but that somehow becomes released so that it is no longer securely contained and the outcome is that the harm occurs. This sequence is easily recognizable as being common to the lion case (the source case) and the case at trial, the Silkwood case (the target case). In the source case a lion escapes from a cage where it was held by its owner and attacks some people, causing harm to them. In the target case, Karen Silkwood, an employee of the McGee Corp., was harmed by some highly radioactive plutonium not securely contained by the McGee Corp. In both cases we are dealing with something that is potentially very dangerous to humans and that could cause harm to them if it is not securely contained.

The first step in the analysis of Spence's argument from analogy is to represent the sequence of episodes in the source case as a script that represents a story. This can be done by breaking the story down into a number of episodes represented by propositions.

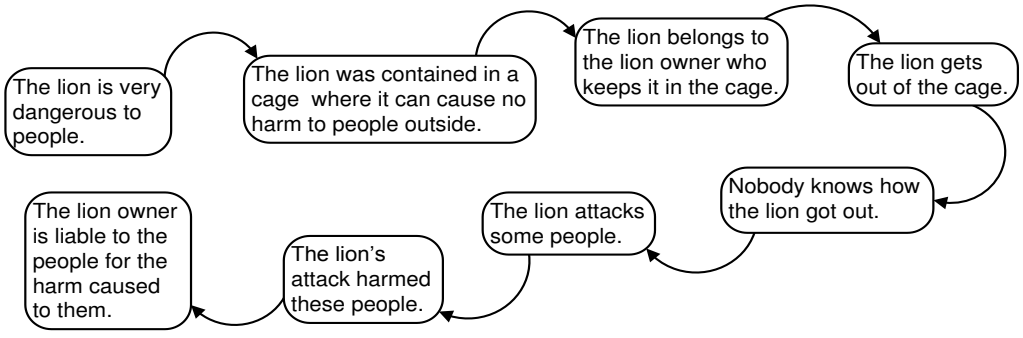

Figure 2: The Lion Story

Each episode is related to another one in the sequence, which in turn is related to another episode, and so forth, so that the episodes, when put together into the sequence, represent a story that is recognizable by common knowledge as a coherent sequence of events. In figure 2, each of these propositions is contained in a text box with rounded corners, and an arrow is drawn from one text box to another representing the inferential step in the sequence from one proposition to another. The sequence of episodes in figure 2 makes sense to us as a coherent whole because we can understand it based on our common knowledge of dangerous animals kept in cages because they might cause harm to people if released in a populated area. This particular story is highly graphic and familiar. We immediately grasp the situation of a dangerous animal escaping from its cage and attacking a person.

The second step in the analysis is to see how a structurally comparable sequence of episodes makes up the story of the central events in the Silkwood case as presented by Spence. The sequence is shown in figure 3. The first step is common knowledge that plutonium is very dangerous to employees. This proposition is a generalization. The next step is the proposition that the plutonium is securely contained so it can cause no harm to employees. This proposition is a qualification of the first one that brings out the fact describing one stage of the situation in the Silkwood case. The next proposition asserts the ownership of the plutonium by the McGee Corp., kept by them in their plant. This additional fact in the case is another part of this sequence that enables it to tie together with the other parts of the story.

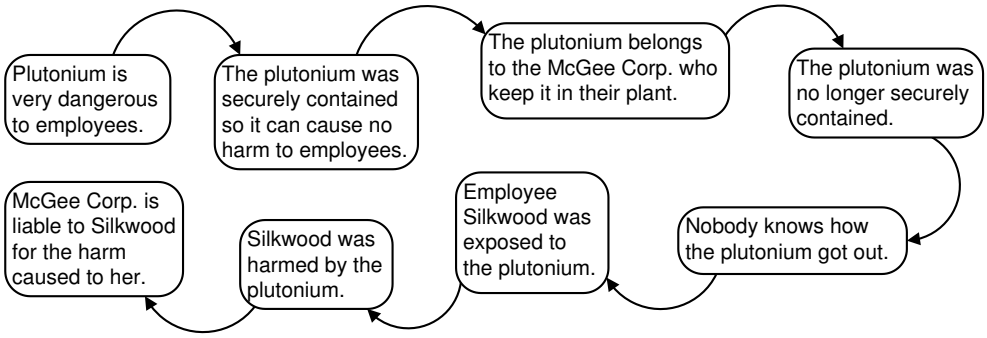

Figure 3: The Plutonium Story

The next proposition, the statement that the plutonium was no longer securely contained, describes a change to the situation in which previously the plutonium was said to be securely contained. The next arrow represents a causal inference. Because the plutonium was no longer securely contained, Silkwood was harmed by it. The final text box, the proposition that McGee Corp. is liable to Silkwood for the harm caused to her, is drawn by inference from the previous propositions in the sequence as a whole unit of thought.

Note that there is a transfer effect between the two stories because of their structural similarity. The story about the lion escaping from the cage and attacking someone is particularly graphic. We can easily understand it, then we might even comment that is that it is a colorful and engaging story that is easy to remember because it is picturesque and calls forth strong emotions. We know how lions attack their prey and when we apply this knowledge to a hypothetical situation of some person being attacked by a lion, the result is a scary scenario. When we transfer the story to the plutonium story there is a powerful impact. We also know that plutonium is

highly radioactive and we know that contact with it can have devastating effects on human beings. When you put the common knowledge of these two scenarios together there is a transfer in the imagination of the audience from the one story to the other.

Finally, in the analysis we need to proceed to a higher level of abstraction in order to see how the script in figure 2 matches the script in figure 3. Despite the differences in content between the pairs of propositions in the text boxes in the two stories, the two sequences as types of stories appear to match up so that one is structurally the same as the other. To model the structural matching of the stories, a story scheme is presented in figure 4 that contains variables in place of the different instantiations of these variables in the representations in figure 2 and figure 3.

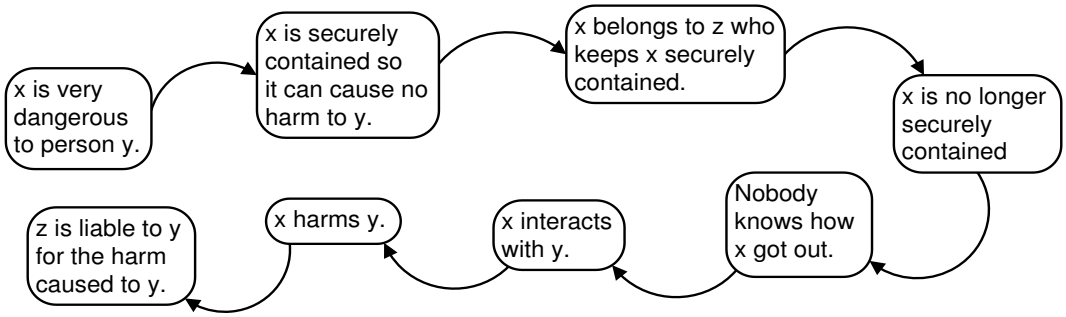

Figure 4: The Story Scheme

The story scheme represented in figure 4 is abstract in nature. It is not a particular story like they lion story or the plutonium story that we can easily grasp and understand. But nevertheless it is important for us to see how it is the bridge that relates these two stories and that underlies the similarity in the argument from analogy from the one case to the other.

5. How the Argument from Analogy Fits into the Plaintiff's Strategy

The Carneades Argumentation System (Gordon, 2010) can be used to outline the basic structure of the closing argument in its essentials. In figure 5, the first argumentation scheme for argument from analogy is applied to the argument. The conclusion is shown as the proposition in the text box at the left, and the two premises of the argument are shown in the text boxes at the right. In the middle there is a node containing the name of the first scheme for argument from analogy. The plus sign the node indicates that the argument is a pro argument, one that supports the conclusion shown at the left.

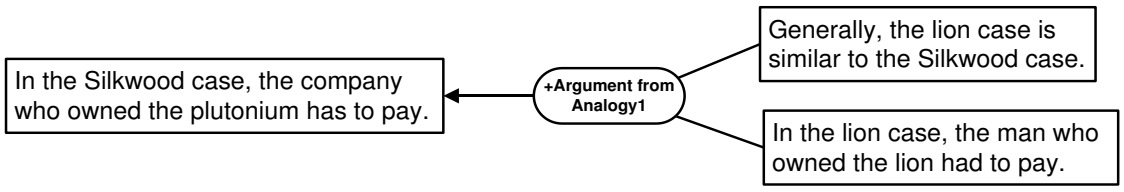

Figure 5: Scheme 1 Applied to the Argument

It can also be shown how the second scheme for argument from analogy can be applied to the argument in figure 6.

Note that the premise shown at the top in figure 6 is different from the premise in the same position in figure 5. The premise in figure 6 states that the lion case is similar to Silkwood case in a certain respect. Using systems of case-based reasoning, pro-arguments can be brought forward citing respects in which one case is similar to the other, and contra arguments can be brought forward citing respects in which one case is different from the other. An instance of this is shown in figure 6, where support to the similarity premises given by the claims that in both cases, something got out and harmed somebody.

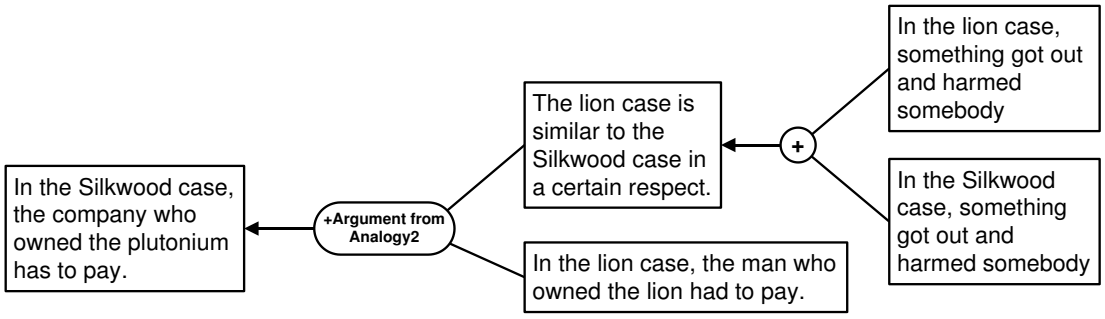

Figure 6: Scheme 2 Applied to the Argument

Additional similarities and differences in the analogy could be filled in to the argumentation displayed in figure 6, forming a sequence of pro-contra case-based reasoning.

It is also very important to understand that because of the common law way of treating strict liability, there is no element of carelessness or intent to harm that needs to be proved. Spence made this point very graphically by using the example of the lion. As he put it, the defendant has to pay if it was his lion and it got away. Another point that Spence makes graphically is that how the lion got away is not an issue. As he put it, the defense can't argue that he had a good cage, that he had a lock on the door, that he had trained people watching the line, or that he did everything he could to maintain security. None of this is relevant. What Spence is doing here is to effectively use the lion analogy to emphasize the requirements of strict liability in a graphic manner that provides "legal structure to his narrative rendering of the evidence presented during the past eleven weeks at trial" (Meyer, 2002, 238).

He also exploits the analogy by saying that in the lion case, you, the person who was harmed, have to pay because it was your lion, unless the person was harmed let the lion out himself. Anyone can easily grasp the principle of strict liability using the lion case because of the graphic and easily comprehensible nature of this example. In logical terms, we can represent the structure of the argumentation as shown in figure 7. What Spence is pointing out is that there is only one defense, and that is the argument that the person who was harmed let the lion out himself.

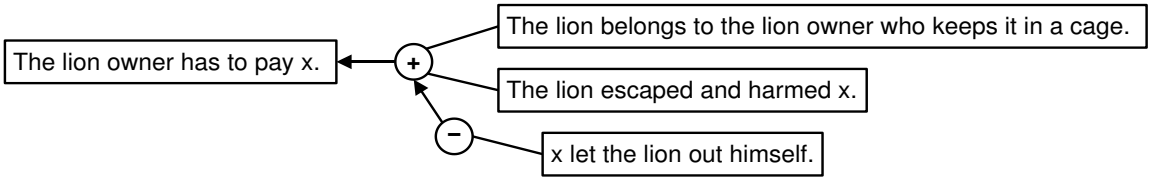

Figure 7: The Defeasible Lion Argument

In figure 7, the structure of this argument is shown by using an argument diagram of the type used to visualize argumentation in the Carneades Argumentation System (Gordon, 2010). The conclusion is shown on the left. The person who was harmed is represented using the variable x. The two premises shown in the text boxes at the top right are sufficient to prove the conclusion that the lion keeper has to pay x, subject to an exception. The exception is the statement that x let the lion out himself. If this statement is true of x in the case at issue, then that finding will defeat the original argument based on the two premises. So we can see if we look at figure 7 that there is a pro-argument and a contra-argument. The pro-argument, indicated by the plus sign in its node, supports the conclusion that it points to. The contra argument, indicated by the minus sign in its node, defeats the argument that it points to. The function of the contra argument is to act as an undercutter that can attack a previous argument. It represents the idea of an exception, in such a way that if the exception holds, the prior argument is defeated.

Finally, let us turn to the second paragraph of the part of Spence's closing argument quoted in section 1. In this part of the speech, Spence utilizes the lion analogy even further by stating what has to be proved in the lion case, and then applies that to the Silkwood case. He says that the defense admits that it was their plutonium, and they admit it was in Silkwood's apartment, and so it follows that the defense already has to concede that the plutonium got away from its previous secure containment. So he sums up by saying, "and we have to prove that Karen Silkwood was damaged. That's all we have to prove." The structure of this part of Spence's argument is shown in figure 8, which combines explanation and argument. The elements of the explanation appear in the text boxes with rounded corners, while the premises of arguments are represented using rectangular text boxes.

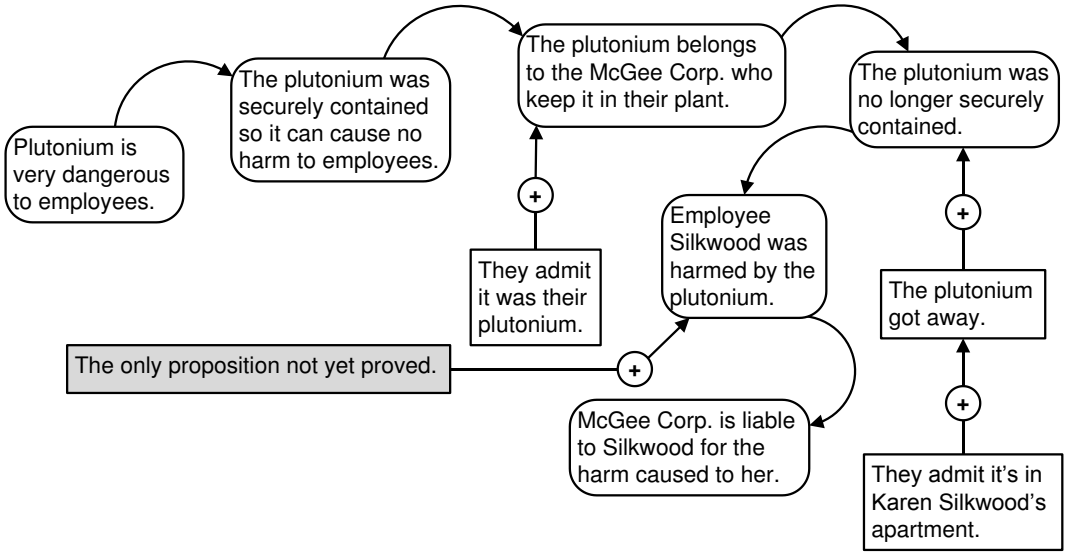

Figure 8: Spence's Resume of the Argumentation in the Silkwood Case

It is shown in figure 8 how parts of the explanation represented in figure 3 as the plutonium story are supported by evidence that has been admitted in the case. So, for example, according to Spence, the McGee Corp. admitted it was their plutonium. This admission is evidence that can be used to support the statement that the plutonium belongs to the McGee Corp. This argument is a pro-argument, and so are the other three arguments shown in figure 8.

Figure 8 is a hybrid structure that combines stories and arguments. Each argument supports a proposition representing an episode in the story. What is different about this particular example is that Spence uses it not only to show the evidence supporting the parts of the story, but he also makes it clear that since all the other propositions in the story that might be subject to doubt are supported by evidence, the only unproven link in the argumentation is the proposition that employee Silkwood was harmed by the plutonium. According to the way Spence has structured the argumentation in the case, this is the only proposition not yet proved. Spence says that all we have to prove is that Karen Silkwood was damaged. But surely this proposition is also very easy to prove, based on the evidence in the case concerning all the medical tests of Karen Silkwood that were performed. Surely the jury would have no doubt about this proposition at all. So we could say that the interlocking of the story with the arguments supporting it provided by evidence in the trial is precisely what makes Spence's argument so highly persuasive.

6. Replies to Objections and Questions for Further Research

In this paper we have modeled the argumentation in Spence's closing argument using the Carneades Argumentation System (Gordon, 2010) and we have used the theory of scripts and stories to show how the similarity premise of the argumentation scheme for argument from analogy can be modeled in a hybrid approach to argument and explanation. The Carneades Argumentation System has the capability for employing argumentation schemes to evaluate and construct arguments, and it also has another feature that needs to be mentioned. Carneades sets an argument in a procedural framework that has three stages, an opening stage, an argumentation stage and a closing stage. Argumentation is modeled using a dialogue structure in which two or more participants take turns making moves in the form of speech acts, for example asking questions, putting forward arguments, making retractions, and so forth. To be able to understand how the rhetorical strategy of Spence's closing argument works, we need to show how the argument from analogy fits into this broader procedural perspective.

Another question is how we extract the appropriate structures, as shown as in figures 2 and 3, from the raw materials in these cases. In this trial, we are at the final (summary) part of the argumentation stage, and so of course Spence is reaching back to the arguments he presented over the earlier stage of the trial where the arguments on both sides were put forward. He is trying to summarize those arguments and crystallize them in one brief but powerfully persuasive argument that will reach the jury and influence them. This is called using the commitments of the audience in persuasive rhetoric according to the formal argumentation structure of the Carneades Argumentation System. The dialectical structure of the system requires the arguer to know that the audience will accept some propositions as common knowledge, and will also have common knowledge about how things normally work in situations that they are familiar with in their experiences. So the structure of the story shown in figure 2 representing the escaping lion, Spence knows, is something that the audience understands very well and can apply to the plutonium sequence of events in the Silkwood case because of the structural matching.

Figure 9 displays the three stages of the procedure. In this instance the framework is that of a common-law trial, where the burden of persuasion is set at the opening stage. The burden of persuasion sets a standard of proof for each side. In a civil trial, the standard is that of preponderance of the evidence, meaning that the side who has the stronger argument wins the case. Based on this standard, the decision of which side wins and which side loses is determined by the jury at the closing stage. Within the argumentation stage, each side has the opportunity to

put forward its strongest arguments and to question and criticize the arguments put forward by the opposing side.

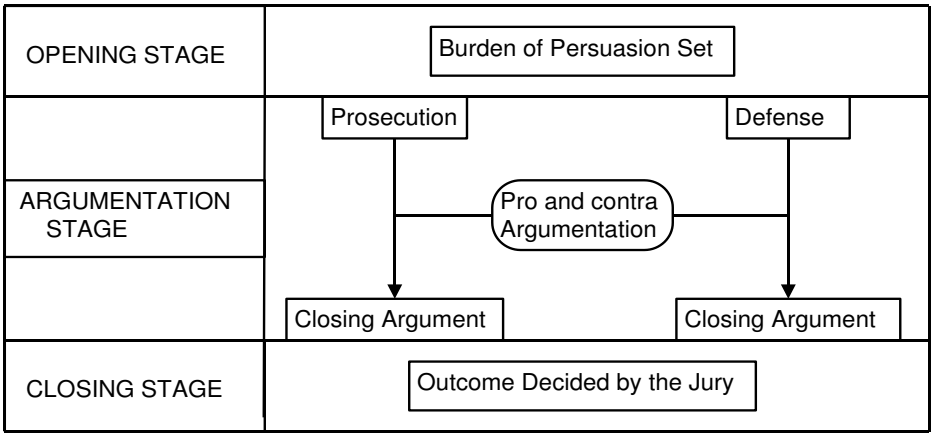

Figure 9: Dialectical Structure of the Rhetorical Strategy

At the end of the argumentation stage, each side also has the opportunity to present a closing argument. The function of this closing argument is to summarize the argumentation put forward to support one's own claim, set at the opening stage, and possibly also to raise some doubts about the case made on the opposing side.

At the argumentation stage of a dialogue, when participants are engaged in pro and contra argumentation, computational models of proof burdens and standards can come into play. Burden of proof at this stage in law is called burden of production (Prakken and Sartor, 2009). Proof modeled in Carneades as a structure enabling an audience to decide whether a proposition satisfies the proof standard that is appropriate for the dialogue the participants are engaged in (Gordon and Walton, 2009). Argument trees represent chains of reasoning where the root of the tree is the ultimate conclusion to be proved, set in place at the opening stage, and the leaves of the tree represent premises and conclusions of inferences that make up subarguments in the tree that moves forward during the argumentation stage. If the questioner can throw enough doubt on the proponent's arguments by asking critical questions and posing counter-arguments, he wins and the proponent loses.

Next we need to reply to another objection. There is a competing theory that could be put forward that differs from the script-based theory arising from the analysis set forth in the discussion of figure 1 above. According to this competing theory the basis of similarity between the two cases of the attacking lion and the escaping plutonium is based on the key factor in the analogy that both lions and plutonium are inherently dangerous. This theory breaks down the sequence of argumentation shown in figure 1 into three stages: (1) an attacking lion is similar to escaping plutonium, (2) strict liability in the lion case is similar to strict liability in the plutonium case, (3) which warrants a transfer of liability from the lion case to the McGee case. On this theory, the key factor in the analogy is that lions and plutonium are both inherently dangerous, and for this reason the strict liability standard applies to both. On this theory, the fact that strict liability applies to both cases is not based on the similarity between two factual situations, but is rather a legal conclusion justified by the facts of each case. On this theory, it is the classification of both cases under the category 'inherently dangerous' that justifies fitting both cases into the

legal concept of strict liability. On this theory therefore, figure 1 does not accurately depict the actual argumentation structure underlying the Silkwood case.

To get further insight into this theory, we need to consider the argumentation scheme for argument from verbal classification (Walton, Reed and Macagno, 2008, 319).

Individual Premise: *a* has property *F*.

Classification Premise: For all *x*, if *x* has property *F*, then *x* can be classified as having property *G*.

Conclusion: *a* has property *G*.

The case of the drug-sniffing dog (Brewer, 1996) shows how an argument that has been classified in the law literature as argument from analogy is really an instance of arguing from analogy to a verbal classification. In this case, a trained dog sniffed luggage left in a public place and signaled to the police that it contains drugs. This case was decided by using arguments from analogy to other kinds of searches, and also by argument from precedent, based on argument from analogy, that compares the case to other cases about searches. But an important, even though often overlooked aspect of the network of argumentation in the case, is the role of argument from verbal classification. Should this event be classified as a search according to the Fourth Amendment? If it can be classified as a search, information obtained as a result of the dog sniffing the luggage is not admissible as evidence, otherwise the information is admissible (Weinreb, 2008). Thus both argument from analogy and argument from verbal classification are involved, and once we see that these forms of arguments are represented by two different argumentation schemes, we can see that classification is only part of the evidential structure of the argumentation in cases of this sort.

Gerry Spence's argument is not designed to persuade the jury that both cases, the escaping lion case and the Silkwood case, fit under the legal category of strict liability, even though it can be seen as a legally convincing argument from this viewpoint. His argument is not simply to take the lion case, fit it under the category of strict liability, and match it to the Silkwood case because of the shared dangerousness of lions and plutonium. His argument is to take the lion case as a clearly understandable incident which the jury can grasp, and appreciate as a case in which it is justifiable to hold the owner of the lion responsible for the harm it caused, even though he was not responsible for any breach of reasonable precaution and security, for example leaving the lock to their cage open. The basis of the argument is the evident similarity between the sequence of stages in what happened in the lion case and the comparable sequence of stages in what happened in the Silkwood case. What needs to be seen here is that Spence's use of argument from analogy has an important explanatory function in that it attempts, at the closing stage where he is trying to summarize what he takes to be the part of the argument that the jury needs to clearly grasp, to express in the simplest and most graphic terms a source case. The jury can then apply the source case to the target case and use the argument from analogy between the two cases to reach the conclusion that Spence advocates.

Why was Spence's closing argument so persuasive? Was it because of the structural analogy, or because of how he chatted with the jury in a personalized country lawyer style? The answer is both. First, his argument was so persuasive because it was an argument from analogy, a form of argument that, according to the argumentation scheme, has one premise that postulates a similarity between two cases. This type of argument is persuasive under two main conditions: one is that the outcome in the source case has to appear acceptable to the audience. The other is that the structural similarity of the kind studied in the paper has to apply to the source case and target case so that one matches the other with respect to the explanation scheme they share. This

structure of the argument from analogy is the dialectical aspect of the case. Second, there is a rhetorical aspect of the case as well.

One of the most striking aspects of Spence's closing argument is what Lief et al. (1998, 124) call the use of "horizontal dialogue". He chats with the jury in a personalized country lawyer style instead of talking down to them as an attorney explaining legal technicalities that they know nothing about. His rhetorical line of argumentation is well thought out, put together and crafted by means of a technique that combines argument with explanation. He explains the notion of strict liability using argument from analogy in such a way that it both explains this sophisticated notion to the jury and advances his case as an argument. The structure of this explanation is represented by the story scheme in figure 4. Such a story scheme can also rightly be called an explanation scheme, because it represents the structure of an explanation. A successful explanation connects a set of propositions together in such a way that it fits a structure that makes sense to the agent to whom it is directed and thereby enables that agent to understand something. It enables the agent to recognize the similarity between different cases because the agent is familiar with how things can normally be expected to go in situations of this general sort. The success of Gerry Spence's closing argument cannot be appreciated only by correctly evaluating it as a legally valid argument based on the notion of strict liability. With respect to the closing part of the argumentation section of the trial, its success needs to be evaluated in light of its explanatory impact on the jury.

An important thing about the rhetorical strategy in the argument from analogy used by Gerry Spence in the Silkwood case at the closing stage is that it performs an explanatory function. How plutonium works, and how it might have somehow contributed to or caused the death of Karen Silkwood in the case at issue is not so familiar to the jury, and they are not scientists who know precisely how plutonium has effects on the human body. However, it can be reasonably assumed that all members of the jury know quite a bit about lions, even if they have only seen them in a zoo, or even if they have never seen a real lion at all. We all know since we are children from reading stories, seeing movies and so forth, that lions are large powerful creatures that attack their prey by using sharp claws and teeth, dragging down the prey and devouring it. Lions are quite picturesque and highly mobile. They are large and powerful, displaying large teeth and otherwise presenting an impressive sight. The idea of a lion escaping from a zoo, and then going on the prowl and attacking people can easily seem highly plausible to most of us. We know how lions operate. They get hungry, search for prey, and then drag the prey down and eat it. Thus the similarity between the source case and the target case contributes to a transfer from the one case to the other that is successful as a story because the source case is something the audience understands and therefore it has a powerful explanatory effect as a story.

On the theory proposed in this paper, the explanation of how Spence's argument is rhetorically persuasive is not that it is an argument from precedent that uses the escaping lion case as a precedent from which the judgment about the plutonium in the Silkwood case can be logically derived. Nor is it merely an argument from classification fitting both cases under the legal category of strict liability on the grounds of the shared dangerousness of lions and plutonium. On the theory proposed in this paper, Spence put forward his argument directed to the jury as an argument from analogy from a source case, the case of the escaping lion, which the jury would find convincing as a reasonable basis for convicting the lion owner of liability for the harm that occurred when the lion escaped. He used the analogy as one premise of his argument transferring the sequence of events in that case to the similar sequence of events in the Silkwood case. Because the jury can easily see the sequence of events in both cases as similar, the

similarity premise of the argument from analogy is well supported because the analogy is supported by the matching of the sequence of the two cases. The explanation of how his argument works is not that strict liability in the lion cases is similar to strict liability in the plutonium case, because both cases come under the classification of being about inherently dangerous things, although this is true. It is rather that law holds the lion owner responsible for what happened as the outcome of the lion case, and the jury can appreciate why the owner is held responsible in that kind of case, and the jury can then transfer their conclusion about that case to the similar case of what happened in Silkwood. The argument from analogy gives them a reason for accepting that it is justified to hold McGee Corp. responsible for what happened in the Silkwood case.

Describing the structure and purpose of a closing argument is a subtle task, because the closing argument can comprise several functions, and because it is meant to combine argument with explanation so that they reinforce each other. The mass of evidence put forward by both sides in a trial can often be not only very complicated, involving many technical details that are inherent to expert testimony. It can be difficult for the jury to understand and remember. Hence the closing argument has an important recall function to bring up once again the main arguments that the attorney takes to be the most important evidential aspects of the case. It also has the important explanatory function of making clear to the jury what precisely is at issue, in terminology the jury can understand. From a rhetorical point of view of persuading a jury, therefore, a successful closing argument has to take the jury back to the opening stage so that the issue to be resolved can be formulated and explained clearly to them. Then it has to walk them through the argumentation stage where the arguments on both sides are considered, and in particular where the main pro-argument for the advocate's claim are summarized in a succinct and memorable way. Finally, it has to show how the burden of proof has been met (or not).

7. Conclusions

The main conclusion of this paper is that the rhetorical use of argument from analogy in the trial setting, masterfully demonstrated by Gerry Spence in his closing argument in the Silkwood case, can be explained as not just the result of matching the factors in the two cases, but depends on a structural mapping. The structural mapping is very different from the kind used in the traditional literature on analogy in cognitive science. It is based on the literature on scripts, and applies them in a new way to build a different theory about what similarity is when used as a premise in argument from analogy. The paper represents a pioneering effort in a new direction, and as shown in section 6, there are many questions about it that remain unanswered so far, but that suggest new avenues of research on a topic so fundamental to our understanding of argumentation in artificial intelligence and law. This new technique of building argument from analogy on the concept of similarity that has an explanatory function is not meant to replace the techniques already widely in use in case-based reasoning to evaluate arguments from analogy using factors or dimensions. There is room for both techniques to be used together. The script-based explanatory model enables the rhetorical analyst of argumentation to apply argument from analogy to the case as illustrated by the classical closing argument of Gerry Spence. However, any argument of this kind, based as it is on argument from analogy, can be analyzed in the Carneades argumentation system using the typical dialogue model of argumentation in which pro-arguments are weighed against con arguments.

Another conclusion of this paper is that the notion of a story needs to be both refined and broadened. Bex, (2011, 60) made the point that the chronological sequence of events does not make up a coherent story unless the events in the sequence are causally connected. His view is based on research in cognitive psychology showing that states and events in a coherent story need to be connected by a causal chain, even though the links in the chain can in some instances be implicit connections. Pennington and Hastie (1992; 1993) showed how juries use causal sequences of actions and events of this sort as patterns when arriving at a decision in a trial. However, an examination of the stories represented in figures 2 and 3 suggests that the kind of story represented in the analysis of Gerry Spence's rhetoric in the Silkwood case does not merely consist of episodes that represent our knowledge about action sequences in which individual actions and events are linked together by a causal relation. These figures include elements that are not episodes, including 'the lion is very dangerous', which represents common knowledge, 'the lion belongs to the lion owner', which represents a setting, and 'the lion owner is liable', a legal conclusion. Thus the conventional meaning of the notion of a script-based story as a causal sequence of actions and events is too narrow to capture the notion of story needed to analyze the notion of similarity needed to help us better understand the argument from analogy used in Gerry Spence's closing argument.

A script-based story in the sense represented by figures 2 and 3, as shown in this paper, is best understood as representing a sequence of propositions often describing actions and events, but also including propositions that represent settings, common knowledge, and other forms of data. In particular, one item in such a sequence that is characteristic is what could be called the outcome, the proposition that appears at the end of the sequence. The arrow leading to this proposition represents an inference. In figure 2, it represents a legal conclusion in the source case, and in figure 3 it represents the matching conclusion drawn in the target case. It is characteristic of a script-based story, in the sense useful for the analysis of the rhetorical argumentation carried out in this paper, that it always has such a concluding proposition represented as the last node in the script.

What needs to be emphasized is that a script-based story, in the sense of the term used in this paper, is not an actual story about some real events in a particular case. It represents a prototypical case into which many actual stories could be fitted as instances. There is an important distinction to be drawn here is between actual and prototypical cases. Gerry Spence sometimes seems to treat the story about the escaping lion as an actual story, but in fact he offers no details of any actual story, instead only offering a general outline of what happened and what legal conclusion should be drawn in this kind of case. It can better be described as a prototypical case. It is the script for this prototypical case that is applied to the (real) Silkwood case.

The theory of how argument from analogy works in legal rhetoric has only so far been illustrated in this one case, and has concentrated on one aspect of similarity is used in argument from analogy in such a case. This aspect is the matching of the structure between the source case and target case modeled by a type of analogy map derived from theory of scripts and stories. More research is needed to answer other questions that have been addressed in the older literature on similarity and analogy. These include the question of how to retrieve the most relevant analog for a given situation, and the question of how to select the best mapping from all possible mappings. These questions have not yet been addressed by the new script-based approach. As suggested by the treatment of the example in the paper, however, five general requirements can be stated on what makes a good mapping to support the similarity premise of an argument from analogy by matching one script to another. The first requirement is that there

should be a one-to-one mapping between the sequence in the source case and the sequence in the target case. The second is that both cases need to fit the explanation scheme that is the common structure for both cases, and what makes the one case similar to the other in the important respect studied in the paper. Fitting the second requirement also assures that the sequence is in the same order in both cases. The third requirement is that the sequence in the source case arrives at a particular outcome, a conclusion to be proved, and this outcome matches that of the target scheme. The fourth requirement is that in order for the source sequence to perform its explanatory function, particularly important in rhetorical persuasion, the story in the source sequence must be understandable to the audience to the argument was directed.

The conclusions drawn from this paper in this section so far have been mainly of a theoretical nature, because the main purposes of the paper have been to build a formal argumentation model of the notion of similarity that is an important part of the argumentation scheme for argument from analogy, and to show how this model can represent an important case of legal rhetoric. But it should not be overlooked that there is also a significant practical conclusion to be derived from this work.

As Laronge (2012) noted, although the direction of research in artificial intelligence and law appears to be one of increasing complexity in formal argument models, this research also has important practical implications because of the potential of argument diagramming as a tool for use in court. Having tried many cases using argument diagramming tools, Laronge has demonstrated that presenting a visual argument map is a highly effective tool for not only representing the evidence in the case to the judge or jury, but also for summarizing the main argument of the case in outline in an argument diagram. Laronge suggests that this method of presenting evidence to a trier can be built on artificial intelligence models, thereby maintaining the necessary level of logical rigor, but at the same time it can overcome the difficulty of overcoming the intelligibility problem, by presenting the argument in a visual manner that is easy to grasp. When an argument diagram is used in this way, it not only fulfills a logical function of showing how conclusions are derived from premises in a case, but also fulfills an explanatory function by summarizing the main argument in a case in a way anyone can clearly understand. The explanatory function of presenting a case by means of the persuasive argument has been brought out and shown to be important in this paper by the application of explanation schemes. But this finding can be generalized to many other kinds of cases, for example in environmental law, where the mass of evidence tends to be both complex and technical, making it very difficult for nonspecialists to grasp and keep in mind when making a decision on how to rule. The practical conclusion suggested by these observations, by the analysis Gerry Spence's rhetorical technique in this paper, and as well as by the experiences of Laronge in using argument diagramming tools successfully in trials, is that visual argumentation methods have great potential as useful tools for trial attorneys.

From the analysis given of the closing argument in this paper it can be shown that there are three levels in the way argument from analogy as deployed rhetorically by Spence in the Silkwood case. At the first level, the argument from analogy maps the plutonium story onto the lion story to support the similarity premise of the argumentation scheme. At this level, the argument has an explanatory as well as an argumentative function. The jury can understand the lion story very well and the point Spence wants to make with it. When there is a transfer by analogy to the plutonium story, the analogy gives a powerful rhetorical force transferring plausibility to the argumentation in that story. But how does the argument from analogy work to transfer plausibility from the one case to the other? As shown in section 3, argument from

analogy often functions to persuade an audience by pairing specific respects (factors) in which two cases are similar. However, in this paper it has been shown that there are not only point by point similarities between the lion story and the plutonium story, there is a structural similarity showing how these individual similarities are connected together. This structural mapping was modeled by using scripts and story schemes.

At the second level, Spence exploits the analogy further, as shown in figure 7, by using the lion comparison to show that all the possible rebuttals by the defense - that he had a good cage, that he had a lock on the door, and so forth - are irrelevant. As he shows by his repetition of his theme, "If the lion gets away McGee has to pay", the only defense available to his opponents is the argument that the person who was harmed let the lion out himself. We have modeled this part of the rhetorical strategy using the argumentation diagram in figure 7, indicating that Spence's strategy at this point is that of extending the analogy in order to present the principle of strict liability to the jury in a graphical and easily understandable manner. So the strategy here, as represented in figure 8, combines argument with explanation. This aspect of the argumentation is well explained by the hybrid theory.

At the third level, we have to appreciate how Spence has used argument from analogy as a common theme in his closing argument by continually coming back to the same basic point about strict liability and its requirements for proof as explained and supported by the lion analogy. This persuasion dialogue technique is called backtracking (Prakken, 2006). Meyer (2002, 239) informs us that Spence, in his later reflections on his own strategy, tells us that in preparing the Silkwood case he played and replayed the theme "If the lion gets away McGee has to pay." as if it were a recurring refrain from a song. In this respect it is comparable to Johnny Cochran's refrain in the Simpson trial, "If the glove don't fit, you must acquit". So what was involved in the argumentation in Spence's closing argument was not just a single use of argument from analogy to make a point, or to counter one of the arguments of the defense. The argument from analogy was used as a narrative theme that tied together the whole carefully orchestrated rhetorical presentation of his closing argument to the jury.

References

Aleven, V. (1997). *Teaching Case Based Argumentation through an Example and Models*. PhD Thesis, University of Pittsburgh, Pittsburgh, Pennsylvania.

Ashley, K. (1988). Arguing by Analogy in Law: a Case-Based Model. *Analogical Reasoning*, ed. D. H. Helman. Dordrecht: Kluwer, 205-224.

Ashley, K. (2006). Case-Based Reasoning. *Information Technology and Lawyers*, ed. A. R. Lodder and A. Oskamp. Berlin: Springer, 2006, 23-60.

Bex, F. (2011) *Arguments, Stories and Criminal Evidence: A Formal Hybrid Theory*. Dordrecht: Springer.

Bex, F. and Prakken, H. (2010). Investigating Stories in a Formal Dialogue Game. In P. Besnard, S. Doutre and A. Hunter (eds.), *Computational Models of Argument: Proceedings of COMMA 2008*. Amsterdam etc, IOS Press, 73-84.

Bex, F.J., Bench-Capon, T.J.M., & Verheij, B. (2011). What Makes a Story Plausible? The Need for Precedents. *Legal Knowledge and Information Systems. JURIX 2011: The Twenty-Fourth Annual Conference* (ed. K.M. Atkinson), 23-32. Amsterdam: IOS Press.

Branting, K. L. (2003). A Reduction-Graph Model of Precedent in Legal Analysis, *Artificial Intelligence*, 150, 59-95.

Brewer, S. (1996). Exemplary Reasoning: Semantics, Pragmatics and the Rational Force of Legal Argument by Analogy, *Harvard Law Review*, 109, 923-1038.
Gentner, D. (1983). Structure-Mapping: A Theoretical Framework for Analogy, *Cognitive Science*, 7 (2), 155-170.
Goldman, A. (1970). *A Theory of Human Action*. Princeton: Princeton University Press.
Gordon, T. F. (2010). The Carneades Argumentation Support System, *Dialectics, Dialogue and Argumentation*, ed. C. Reed and C. W. Tindale, London: College Publications.
Gordon, T. F. and Walton, D. (2009). Proof Burdens and Standards. *Argumentation and Artificial Intelligence*, ed. I. Rahwan and G. Simari. Berlin: Springer, 239-260.
Guarini, Marcello (2004). A Defense of Non-deductive Reconstructions of Analogical Arguments. *Informal Logic* 24: 153-168.
Guarini, M., Butchart, A., Simard Smith, P., and Moldovan, A. (2009). Resources for Research on Analogy: A Multi-disciplinary Guide. *Informal Logic* 29(2), 84-197.
Holyoak, K. J. and Thagard, P. (1989). Analogical Mapping by Constraint Satisfaction. *Cognitive Science*, 13, 295-355.
Laronge, J. A. (2012). Evaluating Universal Sufficiency of a Single Logical Form for Inference in Court, *Law Probability and Risk*, DOI 10-1093lprmgs005.pdf
Lief, M. S., Caldwell, M. and Bryce, B. (1998). *Ladies and Gentlemen of the Jury: Greatest Closing Arguments in Modern Law*. New York: Scribner.
Meyer, P. N. (2002). Making the Narrative Move: Observations Based upon Reading Gerry Spence's Closing Argument in the Estate of Karen Silkwood v. Kerr-Mcgee,Inc., *Clinical Law Review*, 9(1), 229-292.
Pennington, N. and Hastie, R. (1992). Explaining the Evidence: Tests of the Story Model for Juror Decision-making. *Journal of Personality and Social Psychology*, 62(2), 189-206.
Pennington, N. and Hastie, R. (1993). The Story Model for Juror Decision Making. *Inside the Juror: The Psychology of Juror Decision Making*, ed. R. Hastie. Cambridge: Cambridge University Press, 192-221.
Prakken, H. (2006). Formal Systems for Persuasion Dialogue. *The Knowledge Engineering Review* 21 (2006), 163-188.
Prakken, H. and Sartor, G. (2009). A Logical Analysis of Burdens of Proof. *Legal Evidence and Burden of Proof*, ed. Hendrik Kaptein, Henry Prakken and Bart Verheij. Farnham: Ashgate, 223-253.
Rashke, R. (2000). *The Killing of Karen Silkwood: The Story Behind the Kerr-McGee Plutonium Case*, 2nd edition, Ithaca: Cornell University Press.
Schank, R. C. and Abelson, R. P. (1977). *Scripts, Plans, Goals and Understanding*. Hillsdale, New Jersey: Erlbaum.
Wagenaar, W. A., van Koppen, P. J. and Crombag, H. F. M. (1993). *Anchored Narratives: The Psychology of Criminal Evidence*. Hertfordshire: Harvester Wheatsheaf.
Walton, D. (2010). Similarity, Precedent and Argument from Analogy, *Artificial Intelligence and Law*, 18 (3), 217-246.
Walton, D. and Macagno, F. (2006). Common Knowledge in Argumentation, *Studies in Communication Sciences*, 6, 2006, 3-26.
Walton, D., Reed, C. and Macagno, F. (2008). *Argumentation Schemes*. Cambridge: Cambridge University Press.
Weinreb, L. L. (2005). *Legal Reason: The Use of Analogy in Legal Argument*, Cambridge: Cambridge University Press.