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The Story Model of Judicial Decision-Making and Reasoning With Evidence

Nasir Majeed * Ataullah Khan Mahmood †

Abstract: *The argumentative approach, the probability approach, and the story model are the three normative frameworks to reasoning with judicial evidence. The story model describes that judges reach the final conclusion by going through three different stages. The model also offered certainty principles, including evidential coverage, coherence, consistency, plausibility, and structural completeness to evaluate the stories. Different researchers have criticized the story model by pointing out that the model does not elaborate the meaning of evidential coverage and plausibility. Additionally, the story model has also been charged on the ground that it does not guide how to evaluate evidential coverage or plausibility of a story and how to select the best story when judges make more than one story. The present study demonstrates that these shortcomings may be overcome by using anchored narrative theory, causal abductive reasoning, story schemes, critical questions, and principles of inference to the best explanation*

Key Words: Decision-Making, Story, Argumentative, Probability Approach, Judicial Evidence

Introduction

There are three normative frameworks in the academic literature for reasoning with judicial evidence to establish the disputed questions of facts: the argumentative approach, probabilities, and the story model. These frameworks offer systematic methods for examining, analyzing, and weighing judicial evidence (Di Bello & Verheij, 2018). The argumentative approach is associated with Wigmore (1913), and in this approach, the evidential arguments are pictorially represented and analyzed by considering the generalization and attacking and supporting arguments to reach a conclusion in a case. However, this approach is unable to offer a holistic view of the whole evidence given in a case. The second normative framework uses probabilities (mostly Bayesian theorem in odd form, ratio form, and belief networks) to analyze the judicial evidence. However, this approach is criticized because the numbers required for probabilistic calculations are not available in cases, or Judges are unable to offer accurate probabilistic estimations (Prakken, 2014). A third approach uses stories as the main tool for organizing and analyzing judicial evidence. This approach was first suggested by Bennet and Feldman (1981), who claimed that court decisions are made by building and comparing stories about what could have happened rather than statistical reasoning. This approach was further developed by different researchers, and it is called the story model or the scenario approach.

The story model has been developed by Pennington & Hastie (1988), and it is the result of the experiments conducted in the context of explanation-based decisions making in general and in criminal trials in particular. They viewed judicial decisions as a kind of explanation-based decision making because judicial decisions are based on generally incomplete evidence, presented in an unorganized way, different events are established with different pieces of evidence, and each evidence is understood while keeping in view pieces of evidence. The story model is the outcome of the empirical research work of Pennington & Hastie (1988), and it claims that judges accommodate the whole trial information into a narrative story organization on the basis of causal and intentional relations. The story model is a descriptive as well as a normative model for judicial decision-making. According to this model, judges go through three different stages, namely construction and evaluation of evidence, learning verdict options, and matching a story and verdict options. Different researchers have charged the story model on the ground that it does not offer a clear criterion to determine the plausibility, consistency, and evidential coverage of a story. This article argues that the anchored narrative

*PhD Scholar, International Islamic University, Islamabad, Pakistan. Email: nasir.majeed@uog.edu.pk
†Assistant Professor, International Islamic University Islamabad, Pakistan.

theory, the critical questions, inference to the best explanation, and the story schemes are useful techniques to overcome these shortcomings of the story model. In addition to this, the present study offers a critical evaluation of the story model. The present study, other than the introductory section, has four sections; the second section discusses how stories are constructed and evaluated, the third section discusses how judges learn the decisions option and how they match the decision options and features of a story, the fourth section critically evaluates the story model, and the last section concludes the present study.

Story Construction

The first stage in the story model involves constructing and evaluating one or more stories. Pennington & Hastie (1993b) called their model of judicial decisions making a story model because story construction is a core cognitive process in judicial decision making. As far as the construction of a story is concerned, they claimed that judges construct a story by using case-specific evidence, general knowledge about the offence, or expectations about the completeness of a story. The judges may form a story during or after the presentation of evidence (Pennington & Hastie, 1986). Moreover, the judges relied upon deduction, induction, analogy, and considering alternative inferences to evaluate the inferences from evidence and general knowledge. According to the story model, the judges accommodate trial information (case-specific evidence, general knowledge about offence, and expectations about completeness of a story) in a structure called "episodic-schema". The episodic schema" has a variety of episodes (also called the building block of a story) which are connected on the basis of causal relations (Pennington & Hastie, 1993a). The episodic schema is based on the human purposive action sequences, and it organizes different events of a story (Pennington & Hastie, 1986). This episodic schema is shown in figure "A", which has been taken from their work. In figure "A", the episode "initiating events" refers to those events which generate a certain psychological response in the main character's mind. The episode "psychological state of affairs" contains such events which determine the goals. The episode "physical state of the affair" is about such events which enable the main character to perform actions. The episode "actions" refers to the acts performed by the main character, and the episode "consequences" covers the results of "actions" (Pennington & Hastie, 1993a).

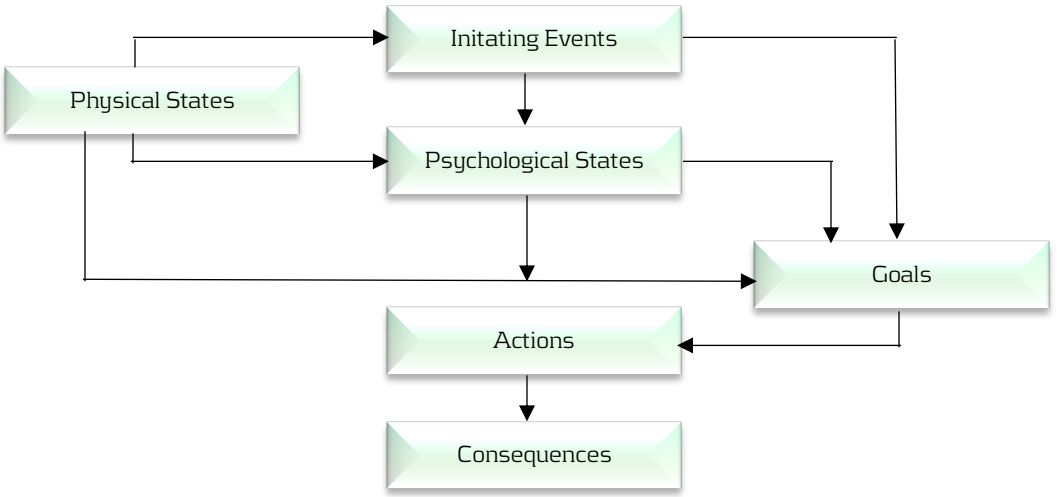

Figure A: Episodic Structure of a Story

The episodic structure in the story model performs three functions: it assists judges to organize different events in a story on the basis of causal and intentional relation, it helps identify the most important events in a story, and lastly, it enables judges to check the completeness of a story (Pennington & Hastie, 1988). Moreover, the story model provides that judges may construct one or many stories, and in that case, the judges will determine the acceptance and confidence level. The next section discusses how acceptance and confidence level in stories is measured in the story model.

Evaluation of Acceptance and Confidence Level in a Story

According to the story model, the acceptance and confidence level in a story is measured with certainty principles, namely evidential coverage, coherence, and completeness. These principles are discussed in the following sections.

Story's Evidential Coverage

A story's evidentiary coverage refers to the degree to which a story and evidence are compatible, and it indicates how well a story accounts for the evidence presented in a trial. (Pennington & Hastie, 1992). In simple words, this principle requires that the major portions of a story must be explained by evidence; however, the evidence does not need to explain the whole story. It is important to notice that when different stories explain different pieces of evidence, these can be linked with the main explananda of a case with the help of their explanatory capacity to explain the explanda (Bex, 2011). Although the story model insists on evidential coverage of a story, it does not elaborate the meaning of evidential coverage, how a story may account for evidence and how the evidential coverage of a story can be tested. However, to (Anderson et al., 2005), evidential coverage in the story model means that how much evidence supports or contradicts a story (Anderson et al., 2005). They also suggest checking it with the following two questions.

i. How well does the evidence back up the story?
ii. Is there any evidence that contradicts the story?

Likewise, Bex (2011) suggested that the evidential coverage of a story can be evaluated by using causal-abductive reasoning. He added that causal abductive reasoning could be used to evaluate the evidential coverage of a single event of a story or the whole story.

Coherence of a Story

"Coherence" is the second principle to test the acceptance and confidence level in a story, and it has three ingredients, namely consistency, plausibility, and completeness.

The consistency of a story in the story model has two senses. Firstly, it refers to a story that does not have internal contradictions with case-specific evidence, and in its second sense, it means a story that has no contradictions with other parts of a story (Pennington & Hastie, 1993a). In simple words, the consistency of a story refers to the absence of explicit and implicit conflicts in different episodes of a story and between a story and evidence (Bex, 2011). It is important to point out that the explicit or implicit contradiction may be ignored if the evidential source of contradictions is not reliable (Bello & Verheij, 2018). Bex (2011) further argued that a single inconsistency between a story and evidence might discard a story if the evidence is reliable.

Likewise, "plausibility" means general and common knowledge about how different events usually happen in the ordinary course of nature in the world. The story model postulates that a plausible story must not contradict the general knowledge (Pennington & Hastie, 1993a) and should accurately portray a basic pattern of states and occurrences that one may encounter in the real world (Bex, 2016). It is important to highlight that the plausibility of a story in the story model is not evaluated with case-specific evidence; instead, it is evaluated with the general knowledge about the world. However, the story model does not provide any insight about which portions of a story should be plausible, what kind of general knowledge will be used to determine the plausibility, how this general knowledge will be analyzed, and how judges will evaluate the overall plausibility of a story. However, these aspects of plausibility can be evaluated with anchored narrative theory, story schemes, and critical questions.

The anchored narrative theory can be used in the story model for a variety of purposes. This theory can be a useful tool to identify the portions of a story that must be plausible or to determine the nature of general knowledge required to judge the plausibility or to estimate the overall causal plausibility, or make explicit an implicit general knowledge used in a story. According to the anchored theory, the actus rea, men's rea, and identity of the accused must be anchored (plausible) independently in generally held true belief (Wagenaar, 2011). Bex et al. (2006) argue that the theory can be used in the story model to identify the portions of a story that must be plausible, and accordingly accused's identity, his actus rea, and men's rea must be plausible. Likewise, the anchored narrative theory demands that a story must be anchored in generally held true beliefs; hence, the story must be anchored in easily acceptable general knowledge. Likewise, the theory is a useful tool to assess the evidential, non-evidential, causal, and non-causal generalization of a story (Bex, 2016). On the same line of reasoning, the theory can also be used to make explicit the general knowledge used for testing plausibility by asking more questions about its applicability (Prakken & Kaptein, 2016). Similarly, the plausibility of a story may be evaluated by asking the following four critical questions. (Anderson et al., 2005, Walton, 2007).

i. Do reasonable background generalizations support the story?
ii. Does the story resemble a well-known story, such as Cinderella, and if so, what is the significance of this?
iii. How well is a story connected as a whole?
iv. Is the story composed of events or a chain of events that could have happened easily?

The plausibility of the overall generalization of a story can also be assessed with the story schemes (Bex, 2016). Bex (2010) points out that the researchers in cognitive science and artificial intelligence developed story grammar which was subsequently used by Pennington and Hastie (1988) in developing the episodic schema for the story model (which is like a story scheme) by deriving inspiration from the story grammar developed by Mandler and Johnson (1977) and Rumelhart (1975) which consists on beginning, development (containing mental response, goals, and actions) and consequences (Bex & Verheij, 2010). It is further pointed out that researchers later on developed explanation patterns to understand the stories, and these explanation patterns contain a standard sequence of events to understand the different events in a story, the reason for their happening, and they connect an event with the general knowledge. The story schemes may be helpful to determine the plausibility of causal generalization in two ways. Firstly, the overall plausibility of causal generalization can be analyzed with the episodic schema used in the story model. If complete information of a story is accommodated in all parts of the episodic structure, causal generalization of a story will be plausible. Secondly, the plausibility of the overall causal generalization of a story can be evaluated using the episodic schema and explanation patterns jointly. In this way, the plausibility of causal generalization can be checked by seeing a match between episodic schema, which serves as an abstract scheme, and the explanation patterns that serve as a specific scheme. Accordingly, if elements of the explanation patterns match with the elements of episodic schema, causal generalization of a story will be plausible. Bex (2016) added that an implicit causal generalization in a story might be made clear using the story schemes. According to him, information in stories usually does not have express causal relations, but story schemes do provide a causal structure, and if the information of a story is described in episode-structure, the causal relations in a story can be made clear (Prakken & Kaptein, 2016).

Structural completeness is the third ingredient to evaluate the coherence of a story. The story model requires that a complete story must have all of its constituent parts, i.e. initiating events, the physical state of affairs, psychological state of affairs, actions, and consequences (Pennington and Hastie, 1992).

Selection of the Best Story

According to the story model, the judges may construct one or more stories on the basis of the evidence, and in that case, they will select one story as the best story. The story model provides that the best story can be selected with the principles of certainty as discussed above. However, the model is charged on the ground that these principles are not satisfactory. Consequently, different researchers have suggested deploying the principle of "inference to the best explanation" to select the best story. The "inference to the best explanation is a descriptive and normative principle that is used to selects the best explanation when there are many explanations of the same observation. The invention of the descriptive perspective of the inference to the best explanation is associated with Herman (1965), who described it as follows:

"In forming this inference, one infers the reality of a hypothesis based on the fact that it would explain the evidence. In general, there will be numerous hypotheses that may explain the evidence; therefore, one must be able to rule out all of them before reaching the inference. As a result, one might conclude that a given hypothesis is correct based on the premise that it would provide a "better" explanation for the evidence than any other hypothesis."

Likewise, Lipton's (2004) description of the inference to the best explanation is regarded as the normative (descriptive as well) aspect of this principle. It is stated that the best explanation is one that better explains a phenomenon in terms of causal relations. Additionally, the reliability of the inference to the best explanation depends upon a positive correlation between explanatoriness and truth (Douven, 2002). Moreover, "the best" in the inference to the best explanation is different to different researchers: to Herman (1965), the best explanation is one that is simple, plausible, having more evidential coverage, and is not ad hoc, to Josephson & Josephson (2003), A hypothesis with the highest degree of explanatory qualities is the best explanation: "best is a summary assessment of accessible explanatory virtues rather than a direct judgment of truth," to Thagard (1978), inference to the best explanation is inference to the theory that best satisfies the criteria of consilience, simplicity, and analogy.

While discussing the application of the inference to the best explanation in the story model, Bex (2011) points out that the selection of the best story in the story model resembles the inference to the best explanation, and resultantly, it can be used to select the best story. Josephson & Josephson (2003) believes that the selection of the best hypothesis or explanation depends upon several factors like the best hypothesis or explanation will have the ability to stand independently, the best explanation is selected after a thorough search of alternative hypotheses, the need of reaching to a conclusion based on available evidence and the reward of being right and cost of being wrong. Similarly, Amaya (2007), the best explanation refers to the most coherent and the most coherent explanation is one that satisfies the positive and negative constraints mentioned in Thagard's theory of explanatory coherence. However, Pardo & Allen (2008) advised considering practical considerations while selecting the best story.

Learning Verdict Representation and Matching with Story

The second stage in the story model involves learning available decision options. According to the story model, judges learn different features of each decision-option, including the accused's identity, his mental state, the circumstances under which he committed an offence, and his actions (Pennington & Hastie, 1992). The decision-makers may learn decisions-options in two ways. Firstly, they (jurymen) can learn alternative decisions-options from the instruction given to them by judges at the end of the trial, and secondly, they may already know the different decision alternatives. After learning the features of different decisions option, judges enter the third stage of decision making, and it involves the matching of the features of a selected story with the features of decision alternatives. The matching between a selected story and decision alternative is carried out by examining the features of a selected story and the features of different alternative decisions. The judges select that decision alternative that has a resemblance with the features of the selected store. According to the story model, the components of episodes of a story and features of alternative decision options determine the matching. Lastly, judges evaluate the level of their confidence in the decision with the principles of the goodness of fit, including the presumption of innocence and burden of proof (Pennington & Hastie, 1992). According to these principles, if events in a story do not satisfy the standard beyond a reasonable doubt, the accused will be presumed innocent and will be declared not guilty. If different events fulfil the criteria beyond a reasonable doubt, judges will give their decision by declaring an accused as guilty.

Merits and Demerits of the Story Model

The story model is an effective framework for reasoning with evidence in judicial trials, and the major merits of this model can be summarized in six points. Firstly, it allows judges to use their own general knowledge to understand trial evidence. Secondly, this model offers a simple method to identify the events which are not backed by evidence: the judges may identify those portions of a story that are not backed by evidence by using episodic structure. Thirdly, the story model not only encourages judges to construct different stories to explain the evidence, but also provides a criterion to select the best story, which minimizes the possibility of tunnel vision. Fourthly, the episodic structure of the story model provides a simple mechanism to make clear the explicit causal relations between several events of a story (Bex, 2016). Fifthly, the guilt or innocence of the accused in the story model is not determined on the basis of single evidence; rather, it is determined after considering the impact of the whole evidence. Thus, the story model is an effective framework to take the holistic view of the evidence given in trials. Lastly, the model also guides how to impose appropriate punishment on the accused.

Despite the merits of the story model, it suffers from several difficulties, summarized in seven points. Firstly, stories may introduce personal bias and prejudice in a real-time trial, and the decisions may be made by ignoring the evidence. Secondly, the use of general knowledge to construct stories may become a tool of discrimination (Robert & Aitken, 2013). Thirdly, the story model is criticized because it was a dummy trial based on audio recording and the participants reached their decision independently, which are unlike juries in real trials; hence, the finding of their experiments cannot be applied in the real-time decision-making process (Pennington &Hastie, 1988). Fourthly, individual pieces of evidence do not have a clear place in the story model; moreover, the credibility and the relevance of a single piece of evidence cannot be checked easily. Fifthly, This approach does not provide how to evaluate a story's coherence or compare various stories (Bex &Verheij, 2010). Sixthly, the model is also charged on the ground that it does not offer settled criteria to determine the plausibility of a story. Although the story model requires that a story be plausible, it does not provide much detail about how the plausibility

should be assessed, which portions of a story should be plausible, and how to select the best story. Seventhly, it is thought that a weak piece of evidence may be given more probative force while reasoning with evidence because the mental model of a case shifts towards interpretation process with the emerging theory of a case, and the effect of this coherent shift assigns more probative value to a piece of evidence which has little evidential value (Schweizer, 2014). Lastly, the story model is not compatible with the existing trial norms. It is pointed out that sometimes jurors will refuse to condemn a defendant who has not provided any defence theory but has only pointed out the flaws in the case of the prosecution. On the other hand, the model requires that judges will construct different stories and pick one as the best story, and it is not harmonious with the existing norms of criminal trials (Schweizer, 2014).

Conclusions

The above discussion reflects that the story model is a comprehensive framework for judicial decision-making in criminal trials, and it guides the decision-makers from the presentation of evidence to sentencing an accused. Moreover, the judicial decisions are rendered after considering case specific-evidence, general knowledge about human actions, and the general knowledge about the expectations about the completeness of a story. Likewise, the story model is a multi-stage model for decision making: the first stage has three sub-stages, namely construction of a story, evaluation of constructed story, and the selection of the best story. At the second stage, different legally possible decision options are explored and learnt, and at the third stage, selected story and decision options are matched. Further to that, the story model was initially a descriptive model; however, it has become a normative model over time. On the same line of reasoning, the certainty principles, as originally suggested in the story model, did not offer a detailed criterion to evaluate the acceptance level of a story. However, these shortcomings may be overcome by using anchored theory, the story schemes, inference to the best explanation, and critical questions. Most importantly, the story model is an effective model to take the holistic view of the whole evidence given in a case that prevents the judges from tunnel vision.

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