Appraisal of Computational Model for Yorùbá Folktale Narrative

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Abstract

Our effort at developing computational models for African narratives, particularly those of Yorùbá folktales, is challenged by the diversity in concepts and methodologies in the discipline. This motivated us to pause and consider the various computational models of narratives in the literature. This is with a view to finding the most appropriate or otherwise adapt a closely related one for the purpose. Thorndyke’s story grammar was among the models of narrative in the literature which were appraised, found close in structure and was adapted for the modelling of Yorùbá folktales narrative. In conclusion we found that the modified version of Thorndyke’s model was appropriate for modelling Yorùbá folktales narrative.

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Keywords and phrases Computational, Modelling, Grammar, Folktales, Yorùbá

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1 Introduction

In indigenous African communities, and amongst the Yorùbá people in particular, folktales are an essential tool for educating the youth on the culture and moral values of society. It is believed that the richness of these folktales provides interesting features and characteristics that can be found in most folktales of African origin. Yorùbá folktales have been orally and informally recounted and shared from generation to generation. The elders have ensured their safekeeping by handing them down to the younger generations through transmittal, recitation, narration and expression of their functions, customs and continuity of the culture in which they occur. These folktales have been studied and admired for their aesthetics and educational benefits. However, these stories are yet to receive attention from the computing research community. Hence, the following questions: 1. Can these folktales be expressed and formalised using the theories of narrative available in the literature, or 2. In case the answer to question 1 is no, can we adapt these theories for the purpose of computational modelling of these folktales?

This paper is organised as follows. The features of Yorùbá folktales and their peculiarities were discussed in Section 2. Section 3 appraises the existing literature in the theory and computational models of narrative. Section 4 discusses the selected model and the necessary
### Table 1 Structure Yorùbá folktales.

<table>
<thead>
<tr>
<th>Item</th>
<th>Feature</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening</td>
<td>À à ló o…. À à ló</td>
<td>Announcement</td>
</tr>
<tr>
<td>Setting</td>
<td>There was a king in a village</td>
<td>Location and Time</td>
</tr>
<tr>
<td>Actors</td>
<td>King, chiefs, elephant, Tortoise, villagers etc.</td>
<td>Human, animals and spirits</td>
</tr>
<tr>
<td>Plot</td>
<td>Events, Episode, Songs, Praise singing</td>
<td>Episodes</td>
</tr>
<tr>
<td>Theme</td>
<td>Wisdom can excel might</td>
<td>Lesson learned</td>
</tr>
<tr>
<td>Proverbs</td>
<td>Ògbón ju Ọgbéra</td>
<td>Traditional saying</td>
</tr>
<tr>
<td>Closing</td>
<td>Ìdí Àló mi rèé gbáńgbáláká</td>
<td>Validity of the tale</td>
</tr>
</tbody>
</table>

Modification for modelling Yorùbá folktales narrative. Section 5 summarises and concludes the paper.

## 2 Structure of Yorùbá Folktales

The Yorùbá folktales narrative exhibits recurrent, conventionalized, and stylized structural components that are not found in other folktales. The target audience in a standard Yorùbá folktale are mostly children aged 3–12. The stories are most often narrated by old women in the community. Elements of standard Yorùbá folktales are listed in Table 1. The Yorùbá folktale is usually started with an announcement by the narrator, Ààló o, which is greeted with an interactive response from the audience, Àààlò. This usually prepares and put the audience in an expecting state, waiting for the tale that will follow. The narrator usually proceeds to state the title which usually includes the principal actors and the theme before the introduction.

A unique attribute of folktale of Yorùbá origin is that they mostly contain songs that are sang at particular stages of the narration [10]. Many of the folktales have musical participation by the audience that adds much to making the tale more interesting and enjoyable. In the Yorùbá folktales, it is common for the audience to answer questions aloud, to clap their hands in rhythm to word repetition (chorus), and to join in the chorus. Most of the songs are repetitive as the same chorus is used repeatedly. The contents of these songs usually convey requests, reasons, petitions, vital instructions or information [11]. There are terms in the song that do not serve any semantic function but only to serve the purpose of creating a rhythm. An example is:

\[ A ó m’ Erin joba, Èrèkù-ewéle. \]

\[ A ó m’ Erin joba, Èrèkù-ewéle \]

As seen in the Tortoise and the Elephant tale. See Appendix A.

The songs are the main mechanism for interactivity in the folktale narratives as they invoke the active audience participation and serve as means to sustain attention, reinforce the story and improve audience experience of the narratives. They usually emphasize the actions and expressions of the characters. They make the tale being narrated lively and dramatic. One of the participatory effects is that they are not easily forgotten and help to remember the whole story hence it usually assist in story recall. Included in the songs are words, phrases and some actions which are repeatedly sung by the narrator and responded to by the audience.

This repetition makes the song and consequently the whole story easy to remember. Personally, I know very well that many folktales that I have been told in my early years of
learning easily comes back to my memory when I hear the song included in the tale. This has also been confirmed in the literature by [18] citing (Matateyou 1997) and (Ngugi wa Thiong’o 1986) that repetition of the language and rhythm which are two important characteristics of oral storytelling in Africa make it easy to understand and recall the story from memory.

Storytelling has been identified as a means of preserving African traditions as these folktales can be well preserved in the songs included in them. The song sometimes reveals some outstanding event of the folktale and serves the purpose of portraying a good picture of the story [11]. A collection of folksongs quickly brings to remembrance the corresponding Yorùbá folktale.

Another component that may be present in Yorùbá folktales is praise singing. This is called Oríkì; it is the art of Oratory in Yorùbá eulogy or praise singing of human beings, animals, places, things and other objects or subjects of interest. A praise is a vocative statement for a person, a family, a group, or even an entire community. It is an organised poetic words in verses and mostly, nominalized to expound individual/family attributes, qualities, successes, accomplishments combined with commonly shared community attributes.

The plot in Yorùbá folktales consists of one or a few events arranged in order determined by the storyteller. The events go through the introduction, where the setting’s characters (animals and/or human), location (on the farm, in the village, market, river etc), and time (usually uncertain, once upon a time, in the olden days etc.) are presented. This will present a scene in equilibrium that was disturbed by the act of one or more members of the community. This proceeds into the problem sometimes requiring the need to find cause of the problem or who caused a disruption. An attempt (which may be one or several) is embarked upon until the solution comes in view or is achieved which may lead to the climax and eventually the resolution of the problem and the conclusion. A story’s plot consists one or more episodes while an episode is composed of a subgoal, one or more attempts and an outcome. The simplest Yorùbá folktales have at least four propositions, representing a setting, beginning, development, and ending, if it is to be considered a story [8].

Themes in the Yorùbá folktales, may be conveyed by one or a set of characters. The theme may sometimes be introduced at the beginning with the opening statement so that the audience has a foreknowledge of the purpose of the story, or included in the resolution at the end of the story. Themes in Yorùbá folktales usually promote the virtues of compassion, generosity, and humility over the vices of greed, selfishness (as evident in the tortoise story and other similar ones), wickedness and excessive pride.

The tales provide causal explanations or reasons for human experience and natural phenomenon and most often end in proverbs. The origin and meaning of most Yorùbá proverbs and proverbial sayings are derived from folktale incidents. Each country in Africa has hundreds of proverbs and folktales. Some proverbs are literally easy to understand, while others are more abstract and difficult to unravel. The separation of proverb from folktale in many instances can obscure the nature of African folklore [19].

According to [14] the association of proverbs and moral tales is, in fact very close in the Yorùbá tradition, a proverb being normally used to round off and drive home the point made in a tale. Thus proverbs may account for the content and intent of some folktales and vice versa.

At the end of the folktale, after eliciting the theme, lesson and the proverb if present, the narrator usually ends with a generic reporting speech announcing that he has delivered the story and the lesson and he had not told a lie. To prove this the story teller declares that his mouth should sound po, po, po, otherwise it should not sound. The sound po po, po, is an onomatopoeia.
Understanding of some culturally bounded concepts and terminologies are also necessary to comprehend the fundamentals of Yorùbá narratives [12]. Ideophones or mimetics, onomatopoeia, metaphor and the informal paraphrases used by the narrator are important components which raise the imagination and interest of the audience in the story. These also enhance the audience understanding and the ability to recall the story.

3 Computational Models of Narrative Reviewed

Narratives have been categorised into formal, somewhat formal, traditional and informal groups [4]. Folktales which are stories orally passed down through generations are included in the examples of traditional and informal narrative. Several works on narrative modelling have been reported. For example, [20], introduced some criteria for representing ambiguous entities in non-fictional and temporal narratives in computer suitable form. [3] developed a computational system capable of automatically creating narrative morphologies from an existing corpus of stories. Analogical Story Merging (ASM) algorithm, based on Bayesian model merging was used. [6] identified the difficulties in intelligently generating narrative texts which will adequately compare with the human generated text. [7] also explained that structural analysis of narratives has influenced the features of how human mind works. These models provided a general view of modelling narratives that does not account for the computational modelling of peculiar features of the Yorùbá folktale narratives described in Section 2.

[17] while simplifying the idea of narrative theory suggests that all narratives have five stages. This simplification facilitates the description of the five stage pattern of experience from an initial state of equilibrium through an action disturbing that state to the attempt of resolving the disruption state, the solution state and finally to the terminal state in which equilibrium is re-established. [13] identified 31 functional parts as fundamental parts of objects in his classification, a function being a character action independent of the character, independent too of its manner of fulfillment, but dependent on its consequence. These may not all appear in a single story, (some functions may be omitted) since each tale is a unique selection and combination of functions but nevertheless always appear in the same sequence. [13] concluded that definition of tales was made from his comparison of the themes of the tales and that the result was a morphology. Though more precise these theories do not describe the structure of the narrative well enough to facilitate computational modelling.

A narrative is generated using the mechanism of a language. The power of the grammar of the language will determine the strength of the expression it can generate. Within the Chomsky theory of language, the computational model of a language for generating expressions in a narrative can be formulated using an appropriately defined grammar [1]. Grammars are good for capturing both the local and global coherence of properly structured plots. Analogical similarities can be found across the corpus by looking for rules and compositions of rules that recur across the narrative corpus [2]. Several story grammars ([15], [8], [16]) have been developed, they have also been used and reviewed by several authors and found to be useful tools for language teaching. Context Free Grammar (CFG) has been identified as a popular model for describing languages. This is because it can describe certain features that have a recursive structure and has been used in the study of human languages.

Rumelhart story grammar which was the earliest upon which other story grammars are built, includes some intricate semantic terms and interpretations which makes the rules somehow complex. There is no provision for series of embedded episodes in Rumelhart story rules. Setting, Beginning (a precipitating event), Reaction (the protagonist’s Reaction and
Table 2 Thorndyke story grammar.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Syntax and Semantics</th>
</tr>
</thead>
</table>
| Rule 1: | Story → Setting + Theme + Plot + Resolution  
Simple stories consist of setting, theme, plot and resolution. |
| Rule 2: | Setting → Characters + Location + Time  
story’s setting contains character location and time. |
| Rule 3: | Theme → Event(s) optional + Goal  
that the story’s theme may have one or more event or none plus a goal. |
| Rule 4: | Plot → Episode(s)  
A story’s plot consists one or more episodes. |
| Rule 5: | Episode → Subgoal + Attempt(s) + Outcome  
Episode is composed of a subgoal, one or more attempts and an outcome. |
| Rule 6: | Attempt → Event(s) | Episode  
An attempt is either one or more events or an episode. |
| Rule 7: | Outcome → Event(s) | State  
An outcome of an attempt is either one or more events or a state. |
| Rule 8: | Resolution → Event | State  
A story’s resolution is either an event or a state. |
| Rule 9: | Subgoal | Goal → Desiredstate  
Subgoal of an episode and the goal of the theme is a desired state. |
| Rule 10: | Characters | Location | Time → State  
Character, location and time are state. |

setting a Goal), Attempt (the effort to achieve the Goal), Outcome (the success or failure of the Attempt), and Ending (the long-range consequence of the action sequence or the added emphasis) were described in [8] as the six major categories of folktales information. This grammar has more rules than all others yet it does not address interactivity. It has been stated that the grammar has difficulty with conversational stories in which one character says something to another, who reacts and says something to the first character, etc. [8]. It also suggests that settings and outcomes will be remembered better than attempts or goals. [16] used a class of simple narrative stories that is described by a generative grammar of plot structures to study the effects of structure and content variables on memory and comprehension of prose passages. Thorndyke story grammar, a context free purely syntactic grammar and independent of story content, identified the underlying structural elements common to a class of narrative discourses and defined plot and theme (See Figure 1). [5] observed that it is only Thorndyke’s story grammar that explicitly provides for a complex or embedded plot. The [16] story grammar predicts that, other things equal, the theme-goal statement of a story would be better remembered than any attempt event statement.

Considering the description of the tale according to its component parts and the relationship of these components to each other and to the whole of the computational model, the Thorndyke story grammar is perhaps the most amenable to Yorùbá folktales. This motivates its choice in this work for the story representation. It is represented by the set of rules in the Table 2.

In the Thorndyke story grammar, the simple story is composed of setting, theme, plot and resolution which are found in African folktales. African folktales may not strictly follow the order of the elements in Thorndyke grammar. For example the commonest order is TIME + LOCATION + CHARACTER (once upon a time, in a village, there lived . . . ). The
Table 3 Modified Thorndyke story grammar.

<table>
<thead>
<tr>
<th>Rule</th>
<th>Syntax and Semantics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rule 1: Story → Opening + Setting + Plot + Resolution + Closing</td>
<td>stories include, opening, setting, plot, resolution and closing statement.</td>
</tr>
<tr>
<td>Rule 2: Opening → Event</td>
<td>Opening is a call and response statement.</td>
</tr>
<tr>
<td>Rule 3: Setting → Characters + Location + Time</td>
<td>Story’s setting contains characters, location and time.</td>
</tr>
<tr>
<td>Rule 4: Plot → Episode+</td>
<td>A story’s plot consists one or more episodes.</td>
</tr>
<tr>
<td>Rule 5: Episode → Subgoal + Attempt+ + Outcome</td>
<td>Episode is composed of a subgoal, one or more attempts and an outcome.</td>
</tr>
<tr>
<td>Rule 6: Attempt → Event(s)</td>
<td>An attempt is the effort to achieve the goal.</td>
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<td>Rule 9: Subgoal</td>
<td>Subgoal of an episode and the goal of the theme is a desired state.</td>
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<tr>
<td>Rule 10: Theme → Event(s)optional + Goal</td>
<td>theme may have one or more event or none plus a goal.</td>
</tr>
</tbody>
</table>

order is not strict. The model will not adequately represent Yorùbá folktales narrative because most of Yorùbá folktales include songs, praise singing and sometimes result or completely describe a proverb.

4 Computational Model of Yorùbá Folktale

Thorndyke grammar as stated by [9], was found to be inapplicable for stories without goal structures. In standard Yorùbá folktales narrative, the goal structure is embedded in the story theme. Several goals can run concurrently and goals do overlap. A need to modify the Thorndyke story grammar for standard Yorùbá suffices. A Thorndyke story grammar representation for the Tortoise and Elephant tale (See Appendix A) is shown in Figure 1.

As shown in Figure 1, the structure cannot represent all the components of Yorùbá folktales. In Yorùbá folklore, before establishing the setting and introducing the characters, there is a preceding announcement Ààló o and a closing announcement (Ìdí Ààló. mi rè ê gbángbáláká...). The melodic content and the poetic eulogy present in Yorùbá folktales are emphasised and used to drive home important points in the story. It is obvious that these aspects of the Yorùbá folktales structure are not represented in any of the story grammar rules developed in the literature. To account for these Yorùbá folktales feature, the modified Thorndyke story grammar 2 was described.

The Modified Thorndyke story grammar (see Figure 2) can be represented by the rules in Table 3.
Figure 1 Thorndyke Grammar Representation of Tortoise and Elephant Tale.
Figure 2 Modified Thorndyke Grammar Representation of Tortoise and Elephant Tale.
Conclusion

The story grammars in literature that have been examined were not completely sufficient for the analysis and the computational modelling of Yorùbá folktale narrative. Efficient as these story grammars are in analysing and modelling folktales from other sources, the style and the total content structure of the Yorùbá folktale narrative are not completely captured by them.

As stated earlier, a simple Yorùbá folktale include, opening, setting, plot, resolution and closing statement. Included in these set of rules are attempts in the episodes to achieve some goals which may include events, songs and praise singing. The resolution may include a proverb or an explanation of a norm. The theme of the story is included in the resolution as shown in Figure 2. The semantic explanations in the Rumelhat grammar include several repetitions. Both the [8] and [15] rules could not accommodate interactive opening and closing events and do not also include a resolution.

Among the story grammars appraised, Thorndyke’s was found to be closely related in the structure and adaptable for the computational modelling of the Yorùbá folktales narrative. A modified Thorndyke story grammar for Yorùbá folktale narrative has been presented.

References

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A Tortoise and the Elephant

There was a great King who ruled in a village in Yorùbá land a long time ago at a time when animals could talk. The town was not peaceful, there was epidemic and death all over the village. The King also took very ill for a long period of time and was at the point of death. After several attempts by medicine men from within the kingdom to heal the king had failed, the dreaded herbalist who dwelt in the evil forest was consulted. He, after examining the king pronounced that the king would have to take a special brew made of elephant body parts or die within seven days.

The King and his chiefs wondered how they would capture a big and dangerous animal like an elephant. The king after consultation with his chiefs made an announcement throughout the kingdom that anyone who would capture an elephant within seven days would get half of the kingdom and his beautiful daughter as a bride.

The tortoise came forward to accept the challenge. He made a request of the King, that a very deep pit be dug and that the pit should be concealed with raffia and mats and that a throne fit for a king should be set on top of the pit. The tortoise made some “àkàrà” balls (bean cakes) and set out into the forest in search of an elephant. He wandered through the forest making inquiries of his fellow animals until the third day when he stumbled on an elephant resting under a tree. Tortoise and the Elephant engaged in a dialog.

Tortoise: Elephant, what are you doing here haven’t you heard the news?
Tortoise: I can’t believe my eyes, a whole King, in the forest under a shade!!.
Elephant: A King, what King?
Tortoise: YOU!! The king is dead and the elders have decided to make you king over the people.
Elephant: (roars with laughter) you must be a joker tortoise, who would want to make an old ugly elephant like me a king?
Tortoise: There is no time for explanations, preparations are already at an advanced stage in the kingdom for your coronation, we must make haste, see, I have proof (he brought out one of the “àkàrà” balls and handed one over to the elephant). This “àkàrà” is only a small part of the delicacies being prepared for your coronation.

Elephant: (putting the àkàrà into his mouth). Tortoise began to sing:

À ó m' Erin joba, Èrèkú-ewele.
À ó m' Erin joba, Èrèkú-ewele.
Ní wele, ní wele Èrèkú – ewele.
A ó m' Erin joba, Èrèkú-ewele.
A ó m' Erin joba, Èrèkú-ewele.
Ní wele, ní wele Èrèkú – ewele.
Ní wele, ní wele Èrèkú – ewele.
Ní wele, ní wele Èrèkú – ewele.
Ní wemu, ní wemu Èrèkú – ewele.
A ó m’ Erin joba, Èrèkú-ewele.
A ó m’ Erin joba, Èrèkú-ewele.

And so the tortoise led the elephant all the way to the village handing out the àkàrà balls to him at intervals and singing popular coronation songs to him all the way. As the tortoise and the elephant approached the palace, news of the capture of the elephant spread like wild fire, everybody came out of their houses and started following the duo to the palace joyous and joining in tortoise’s songs and dancing. This created an atmosphere of festivities reinforcing the belief in the elephant’s mind that he was to be made king.

Elephant: Your story must be true the people are really joyous to see me.

Tortoise: You know I wouldn’t lie to you, can’t you see them singing that your reign shall be long?

As the throne finally came into sight, the elephant lumbered into it majestically amidst dancing and singing. He sat on the throne and instantly the ground gave way beneath him and he fell into the pit.

The king’s warriors immediately descended upon him with spears and clubs and butchered him. Once the king had taken a sip of the elephant broth made for him, he became instantly well and fulfilled his promise towards the tortoise.