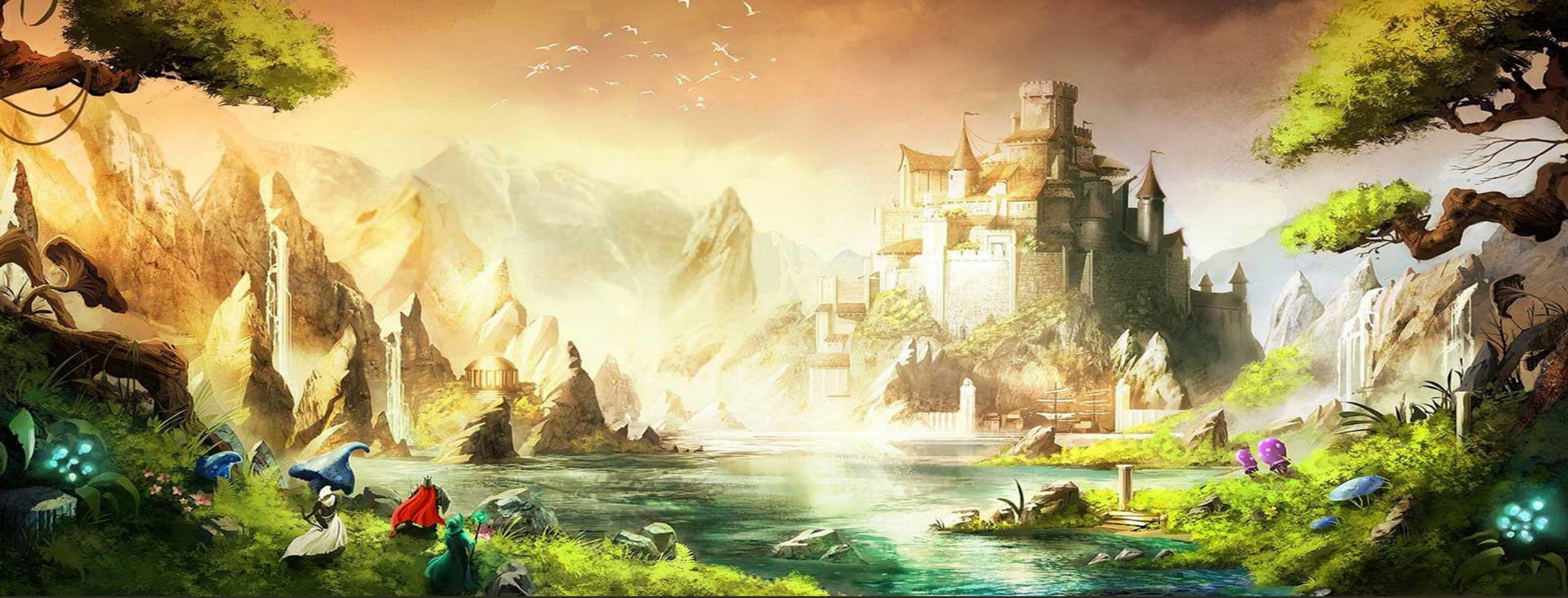




FOLK AND FAIRY TALES ONTOLOGY

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OBJECTIVE AND MOTIVATION

BACKGROUND

- Substantial part of oral history.
- Important role in the cultural heritage of regions, nations or cultural minorities.
- Grimm brothers
- African folk tales



AIMS



- African folk tales following
- Russian folklorist Vladimir Propp.
- The ontology contains:
 - ❑ The Proppian functions and entities encoded within.
 - ❑ Specific folk tale motifs according to the Aarne-Thompson-Uther Index (ATU).

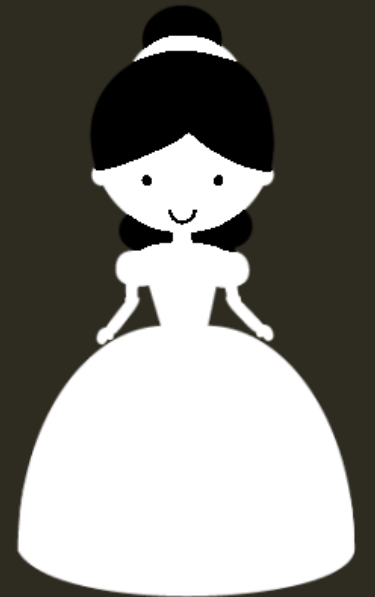


DOMAIN

MOTIFS INDICES

➤ Folk tales motifs are classified by two motif indices:

- ❑ The Aarne-Thompson Uther index (ATU)
- ❑ The Thompson-Motif-Index (TMI)



PROPP FUNCTIONS



➤ 4 Axioms:

1. The functions of characters
2. The number of functions known to the fairy tale is limited.
3. The sequence of functions is always identical.
4. All fairy tales are of one type in regard to their structure.



CONCEPTUALIZATION

DEFINITION OF THE ONTOLOGY

- Properties $\langle C, I, A, R \rangle$
- $c_i \in C$ set of Classes
- $i_i \in I$ set of Instances
- $a_i \in A$ set of Axioms
- $r_i \in R$ set of Relations





ONTOLOGY DEMONSTRATION

UPPER LEVEL OF THE SUBCLASSES

The screenshot displays the Protégé OWL editor interface. The top menu bar includes File, Edit, View, Reasoner, Tools, Refactor, Window, and Help. The address bar shows the active ontology: [FairyTaleOntology](http://www.semanticweb.org/213532608/ontologies/2018/4/FairyTaleOntology) (http://www.semanticweb.org/213532608/ontologies/2018/4/FairyTaleOntology). The left sidebar shows the class hierarchy under 'owl:Thing', with 'Proprian_Function' selected. The right pane displays the 'Class Annotations' for 'Proprian_Function', showing an annotation with the property 'rdfs:comment' and the text: 'Proprian Functions and subfunction with their original numbering and their class symbols according to Propp: Morphology of the Folk Tale, Univ. of Texas Press, 1968'. The bottom status bar indicates 'Reasoner active' and 'Show Inferences' is checked.

File Edit View Reasoner Tools Refactor Window Help

< FairyTaleOntology (http://www.semanticweb.org/213532608/ontologies/2018/4/FairyTaleOntology) Search...

Active Ontology x Entities x Individuals by class x DL Query x

Annotation properties Datatypes Individuals
Classes Object properties Data properties

Class hierarchy: Proprian_Function

owl:Thing

- Anthology
- ATU_Class
- Object
- Person
- Proprian_Function**
- Tale
- Task

Proprian_Function — http://www.semanticweb.org/213532608/ontologies/2018/4/FairyTaleOntology#Proprian_Function

Class Annotations Class Usage

Annotations: Proprian_Function

Annotations

- rdfs:comment
 - Proprian Functions and subfunction with their original numbering and their class symbols according to Propp: Morphology of the Folk Tale, Univ. of Texas Press, 1968

Description: Proprian_Function

Equivalent To +

SubClass Of +

- applies some Tale

General class axioms +

SubClass Of (Anonymous Ancestor)

Instances +

Target for Key +

Disjoint With +

Disjoint Union Of +

Reasoner active ☒ Show Inferences

LEVEL OF PROPPIAN FUNCTIONS AND THEIR SUBFUNCTIONS

The screenshot displays the Protege OWL editor interface. The left pane shows the class hierarchy for **XVII_J_Branding**, which includes subclasses like **Villa_a_Villainy_(Lack)**, **I_β_Absentation**, **II_γ_Interdiction**, **III_δ_Violation**, **IV_ε_Reconnaissance**, **IX_B_Mediation**, **V_ζ_Delivery**, **VI_η_Trickery**, **VII_θ_Complicity**, **VIII_A_Villainy**, **X_C_Beginning_Counteraction**, **XI_↑_Departure**, **XII_D_The_first_function_of_the_donor**, **XIII_E_The_hero's_reaction**, **XIV_F_Provision_or_receipt_of_a_magical_agent**, **XIX_K_Liquidation_of_Lack**, **XV_G_Spatial_transference_between_two_kingdoms_guidance**, **XVI_H_Struggle**, **XVII_J_Branding**, **J1_Brand_is_applied_to_the_body**, **J2_Hero_receives_a_ring_or_a_towel_or_a_handkerchief**, **XXVIII_I_Victory**, **XX_↓_Return**, **XXI_Pr_Pursuit**, **XXII_Rs_Rescue_of_the_Hero**, **XXIII_o_Unrecognized_arrival**, **XXIV_L_Unfounded_claims**, **XXIX_T_Transfiguration**, **XXV_M_Difficult_task**, **XXVI_N_Solution**, **XXVII_Q_Recognition**, **XXVIII_Ex_Exposure**, and **XXX_U_Punishment**.

The right pane shows the details for **XVII_J_Branding**, including its URL, class annotations, and a description. The description states that **XVII_J_Branding** is equivalent to **correspondsTo some XXVII_Q_Recognition** and **Proppian_Function**. It also lists general class axioms, such as **applies some Tale**, and instances, including **VII_θ_Complicity**, **XX_↓_Return**, **XXVI_N_Solution**, **X_C_Beginning_Counteraction**, **XXIII_o_Unrecognized_arrival**, **XI_↑_Departure**, **XXX_U_Punishment**, **XIII_E_The_hero's_reaction**, **XII_D_The_first_function_of_the_donor**, **α_Initial_Situation**, **XIV_F_Provision_or_receipt_of_a_magical_agent**, **XXVIII_Ex_Exposure**, **XXVIII_I_Victory**, **VIII_A_Villainy**, **XXVII_Q_Recognition**, **XVI_H_Struggle**, **IV_ε_Reconnaissance**, **XXXI_W_Wedding**, **XXII_Rs_Rescue_of_the_Hero**, **I_β_Absentation**, **"Villa_a_Villainy_(Lack)"**, **II_γ_Interdiction**, **XXIV_L_Unfounded_claims**, **XXV_M_Difficult_task**, **XV_G_Spatial_transference_between_two_kingdoms_guidance**, **XXIX_T_Transfiguration**, **III_δ_Violation**, **VI_η_Trickery**, **XXI_Pr_Pursuit**, and **V_ζ_Delivery**.

LEVEL OF DRAMATIS PERSONAE

The screenshot displays the Protégé ontology editor interface. The top menu bar includes File, Edit, View, Reasoner, Tools, Refactor, Window, and Help. The address bar shows the active ontology: [FairyTaleOntology](http://www.semanticweb.org/213532608/ontologies/2018/4/FairyTaleOntology). The left sidebar shows the class hierarchy, with 'Princess' selected under the 'Fictional_Person' class. The right sidebar shows the 'Princess' class details, including its description, sub-classes, and instances.

Class hierarchy: Princess

- owl:Thing
 - Anthology
 - ATU_Class
 - Object
 - Person
 - Author
 - Editor
 - Fictional_Person
 - Dispatcher
 - Donor
 - False_Hero
 - Family_Member
 - Helper
 - Hero
 - Princess**
 - Princess'_Father
 - Seeker
 - Victim
 - Villain
- Proppian_Function
- Tale
- Task

Description: Princess

Equivalent To: +

SubClass Of: +

- Fictional_Person
 - Victim

General class axioms: +

SubClass Of (Anonymous Ancestor): +

- appearsIn some Tale
 - Hero or Family_Member or Princess

Instances: +

Target for Key: +

Disjoint With: +

- Princess'_Father

Disjoint Union Of: +

Reasoner active ☒ Show Inferences

OBJECT PROPERTIES

The screenshot displays the Protégé OWL editor interface for the 'FairyTaleOntology'. The left sidebar shows a tree of object properties, with 'attackedBy' selected. The main panel is divided into two sections: 'Annotations' and 'Description'.

Annotations: The 'attackedBy' property is annotated with an `rdfs:comment` stating: "Corresponds to function XII. D "The hero is tested, interrogated, attacked by the donor " Not to be confused with combat between hero and villain".

Description: The 'attackedBy' property is configured with the following characteristics:

- ☐ Functional
- ☐ Inverse functional
- ☐ Transitive
- ☐ Symmetric
- ☒ Asymmetric
- ☐ Reflexive
- ☐ Irreflexive

The 'Description' section shows the following relationships:

- Equivalent To:** +
- SubProperty Of:** + `owl:topObjectProperty`
- Inverse Of:** +
- Domains (intersection):** + `Hero`
- Ranges (intersection):** + `Donor`
- Disjoint With:** +
- SuperProperty Of (Chain):** +

The bottom status bar indicates 'Reasoner active' and 'Show Inferences' is checked.

DATA PROPERTIES

The screenshot displays the Protege OWL editor interface for the **FairyTaleOntology**. The left sidebar shows the **Data property hierarchy** for **ATU_Number**, listing its sub-properties: **Date**, **Description**, **FunctionSequence**, **Key**, **Origin**, **Publisher**, **Title**, and **Verbalisation**. The main workspace is divided into several panels:

- Annotations:** Shows the URI for **ATU_Number** and a list of annotations.
- Characteristics:** A list of property characteristics, with **Functional** checked.
- Description:** A detailed view of the property's configuration, including:
 - Equivalent To:** A button to add equivalent properties.
 - SubProperty Of:** A list showing **owl:topDataProperty** as the parent property.
 - Domains (intersection):** A list showing **ATU_Class** as the domain.
 - Ranges:** A list showing **xsd:string** as the range.
 - Disjoint With:** A button to add disjoint properties.

The bottom status bar indicates that the **Reasoner** is active and **Show Inferences** is checked.

INDIVIDUALS ADDED TO THE ONTOLOGY

The screenshot displays the Protégé ontology editor interface for 'FairyTaleOntology'. The left sidebar shows a list of individuals, with 'BH_λ' selected. The main area on the right provides details for 'BH_λ', including its URI, usage, and various assertions.

Individuals by class:

- Alexander_McCall_Smith
- BAG_D
- BAG_E
- BAG_F
- BAG_J
- BAG_MAN
- BAG_OLD_MAN
- BAG_VERY_OLD_MAN
- BAG_W
- BAG_WOMAN
- BAG_y2
- BAG_↓
- Bantu_Folk_Tales_From_Southern_Africa
- BH_H
- BH_Hunter
- BH_I
- BH_Leopard_Mother
- BH_β
- BH_ε2
- BH_ζ2
- BH_η3
- BH_λ**
- BH_↓
- BMC_A
- BMC_I
- BMC_K
- BMC_y
- BMC_δ
- Brave_Hunter
- Children_of_Wax

Individual Annotations:

- Individual Annotations
- Individual Usage

Usage: BH_λ

Show: ☒ this ☒ different

Found 16 uses of BH_λ

- BH_H
 - BH_H PreceededBy BH_λ
- BH_η3
 - BH_η3 FollowedBy BH_λ
- BH_λ

Description: BH_λ

Types: **λ Preliminary_misfortune_caused_by_?**

Same Individual As: +

Different Individuals: +

Property assertions: BH_λ

Object property assertions:

- applies Brave_Hunter
- PreceededBy BH_λ
- FollowedBy BH_H
- FollowedBy BH_↓
- FollowedBy BH_I

Data property assertions:

- Verbalisation "These words pleased the hunter, who shouted out to her that she could spend that night in his hut."^^xsd:string

Negative object property assertions: +

Negative data property assertions: +

Reasoner active ☒ Show Inferences



ANNOTATIONS

Metrics

| | |
|---------------------------|---------|
| Axiom | 1860 |
| Logical axiom count | 1395 |
| Declaration axioms count | 462 |
| Class count | 201 |
| Object property count | 39 |
| Data property count | 10 |
| Individual count | 214 |
| Annotation Property count | 1 |
| DL expressivity | SR Q(D) |



CONCLUSION

OVERVIEW



- Sophisticated ontology
- Proppian theory
- Allows users to add more stories
- Ontology can be alone standing or it can be connected to Declerck et.al.'s work
- Long term:
 - ❑ Modelling the relationship between the functions
 - ❑ Dramatis Personae

FURTHER WORK

- Adding more annotations
- The more fairy tales of different origin added, the more and complex the deductions about the structure and verbalisation of African folk tales can be made.
- Compare these findings about African folk tales to studies of folk tales of different origin





REFERENCES

BOOKS

The stories included in the ontology were cited from:

- ***African Tales***
by **Harold Scheub**, University of Wisconsin Press, 2005
- ***Bantu Folk Tales From Southern Africa***
by **Phyllis Savoury**, Howard Timmins, 1974
- ***Children Of Wax***
by **Alexander McCall Smith**, Canongate, 1989
- ***When Hippo Was Hairy And Other Tales From Africa***
by **Nick Greaves**, Southern Book Publishers, 1997

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- V. Propp, *Morphology of the Folktale*, vol. 10. University of Texas Press, 1968.
- S. Malec, "Autopropp: Toward the automatic mark-up, classification, and annotation of Russian magic tales," in *Proceedings of the First International AMICUS Workshop on Automated Motif Discovery in Cultural Heritage and Scientific Communication Texts* (P. Lendvai, ed.), pp. 112{115, 2010.
- P. Lendvai, T. Declerck, S. Daranyi, and S. Malec, \Propp revisited: Integration of linguistic mark-up into structured content descriptors of tales," in *Digital Humanities 2010*, Oxford University Press, 7 2010.
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