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Cinderella: An Evolutionary Approach to the study of folktales

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ABSTRACT

The recent application of evolutionary approaches has brought new perspectives to historical and cross-cultural studies of folktales. In this sense, by using the framework of cultural evolution theories, this study aims to shed light on the evolutionary history of Cinderella, arguably the most famous and widespread folktale in the world, whose origin remains unknown. However, principled and consistent criteria for coding elements of oral narratives are still lacking. As such, this study presents a new set of coding rules which can be applied to any samples of oral narratives. By combining different methodologies, both qualitative (i.e., structural analysis) and quantitative (i.e., cultural transmission theories and phylogenetic analysis), I developed a coding system that is then applied to the data corpus of Cinderella, which counts almost 300 variants from different parts of the world including Europe, Africa, and Asia. Variants of this tale have been categorised by folklorists into five different tale-types (BI, B, AB, A, and C), which are believed to share a common ancestor. To shed light on their origin and mutual relationships, 266 variants were analysed using phylogenetic methods and tools from population genetics. The findings partly confirmed existing folklore theories, while also yielding new insights. Specifically, I found that type BI was formed by two distinct clades (Catskin and Cap o' Rushes) sharing a common ancestor. As for Type A and C, considered a unique type under the ATU index, they are two different clades sharing a common ancestor. Stories traditionally of Type B did not form a phylogenetic group, even though their motifs have been consistently borrowed, together with those of A, in forming Type AB. In this regard, I showed how hybridization is a main force in forming stories. The presence of cultural reticulation, in terms of motifs borrowing, was investigated by employing network analysis which shows how cultural units are transmitted and blended in packages. Overall, the use of a pluralistic approach, which involves a wide range of interdisciplinary methodologies, broaden our understanding about the evolution of stories.

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GENERAL INTRODUCTION

Storytelling is considered an intrinsic human feature, able to provide an alternative and imaginative reality where humans can experience challenges encountered in the real world. Additionally, it is a vehicle for the transmission of knowledge, values, and social norms among individuals. Consequently, cross-cultural analyses of stories can help us to comprehend universal aspects of human condition and to shed light on local solutions to culturally and ecologically specific adaptive problems (e.g., Gottschall, 2012; Sugiyama, 2003). As such, culture evolution theory can furnish interesting insights about the evolution of stories.

Cultural evolutionary theory draws on the idea that genes and culture are two different but co-evolving systems of heritable variation, each based on autonomous mechanisms of information transmission (i.e., imitation and teaching in addition to biological reproduction) (e.g., Cavalli-Sforza & Feldman, 1981; Boyd & Richerson, 1985; Durham, 1991; Richerson & Boyd, 2005). In this context, Boyd and Richerson (1985) defined culture as information, acquired through social learning able to affect human behaviour. The fact that cultural information is acquired socially makes it both different from genetically acquired and individually learned information. Cultural evolution sees cultural traits as products of "descent with modification" (Darwin, 1859) resulting in new variants that can be transmitted and inherited in the population. The process includes several modes of transmission: vertical (from parent to offspring), horizontal (within people of the same generation), and oblique transmission (from unrelated elders) (Cavalli-Sforza & Feldman, 1981). Furthermore, transmission can be "one-to-one", "one-to many", "many-to-one", "many-to-many" (Henrich et al., 2001). However, not all cultural traits are equally transmitted across generations. Culture transmission theorists have identified different "biases" that can alter the content of a certain type of information to make it successfully transmitted to the next generation: content biases (adopting traits based on their attractiveness); frequency-dependent biases (selecting traits based on their frequency); model-based biases (selecting traits based on the model e.g., prestige, age, similarity) (Mesoudi et al., 2011).

Few studies have analysed storytelling within the framework of culture evolution theory (e.g., Tehrani, 2013; Ross et al. 2013; Ross & Atkinson, 2016; Silva & Tehrani, 2016). Folktales represent an ideal case study for culture evolutionary theory for several reasons. First, folklorists have long drawn parallels between narratives and biological organisms (Hafstein, 2001). In fact, individual tales can be considered like 'organisms' while tales features can be seen as cultural traits (e.g., Ross et al., 2013), in other words as pieces of cultural

"information" (sensu Boyd and Richerson, 1985), which mutate as they get transmitted vertically and obliquely between generations over time, and horizontally among individuals and groups.

The adoption of such a scale of analysis (i.e., tales' features as traits) facilitates the systematic description of these special human artefacts, as well as the identification of quantifiable patterning in their behaviour over time and space. Secondly, folktales are by definition a product of "descent with modification", as they are prone to cumulative change both due to enrichment and degradation by more than one story-tellers with parts of the story added or lost as they are being passed down from generation to generation (Tehrani, 2013). For this reason, they are useful for analyses of incomplete records of the past, allowing to make inferences about evolutionary histories.

In this respect, the aim of this research is to analyse Cinderella within the framework of cultural evolutionary theory, in order to bring new theoretical and analytical perspectives to understand its origin and development. By applying quantitative methods of phylogenetic analysis, methods from cultural transmission theory and network analysis, I will address three key questions:

Aim 1. Which is the best way to code oral narratives? Is it possible to identify a set of coding rules that is principled and consistent?

Aim 2. What is the evolutionary history and origin of the folktale of Cinderella? How the different tale-types of Cinderella are in relation to one other?

Aim 3. How have stories been assembled in the past by storytellers? Specifically, which is the mechanism underlying the creation process of new stories?

Cinderella will be targeted for several reasons: first, it has been very well documented by folklorists, providing rich and readily available datasets for the analyses (Cox, 1893; Rooth, 1951; Ting, 1974). Second, it is both extremely widespread and demonstrates clear variation across cultures as its many variants were catalogued by folklorists into five different types. Third, as these types present different characteristics and distribution, many theories have been formulated regarding their origin and mutual relationships that will be tested by employing quantitative methods.

In sum, this study aims to make an important contribution to comparative studies of folklore, as well as exploring how tales are influenced by cultural and psychological selection pressures. By addressing these issues, this project seeks to develop an interdisciplinary dialogue among anthropology, psychology, biology, and folktales studies.

CHAPTER 1

LITERATURE REVIEW: Macro-evolutionary studies of narratives

1.1 Early folklore studies

The study of narratives has been of great interest since the publication of the Brother's Grimm's' Children and Household Tales' (1812-1814), a two volumes collection of Germanic tales, which stimulated serious scholarships in folklore. Following the publication of Grimm's work, there was a huge interest of collecting tales among common people fueled by the rise of romantic nationalism that promoted the idea that folktales embodied a national heritage. Soon, folklorists started to notice that tales coded in different traditions showed similar plot features as in the case of "German" folktales recognizably related to stories recorded in Slavonic, Indian, Persian, and Arabic oral traditions (Grimm, 1984). In this sense, folklorists highlighted the need to adopt a systematic classification for folktales record. Since it was hypothesized that folktales evolve while being transmitted across generations, tales should be grouped in categories according to their shared descent (e.g., species, genera and families) just like biological organisms are represented in taxonomic ranks (e.g., Gennep, 1909; Thompson, 1951).

The first attempt to compare folktales in a systematic way was carried out by the exponents of the Finnish school, Kaarle Krohn and Antii Aarne, who established the historic-geographic method between the nineteenth and the twentieth century which was then further developed by other folklorists (e.g., Walter Anderson, Stith Thompson) (Thompson, 1951). The aim of historic-geographic method was two-fold. First, it aimed to reconstruct the original form of a tale, the so called "archetype", by analyzing historical and geographic factors to explain the variability observed among the variants of a given tale-type (Thompson, 1951). Secondly, by sorting all variants geographically and chronologically, they aimed to detect if a tale was of an old or recent origin (ibid). Since over time, tales accumulate locally adaptations to suit ecological and normative contexts, giving rise to "oikotypes" or "ecotypes" (Sydow, 1948), given a rare or localized tale (ecotype) in a characteristic area, that was believed to be of a recent origin, whereas widespread forms were considered ancient (Thompson, 1951). The historic-geographic method assumed that all variants that belonged to the same tale-type were to be considered related. However, some folklorists, such as Andrew Lang, proposed that similarities among tales might instead have evolved by independent invention. Lang compared common features in folktales to resemblances found

in ceramic patterns produced in different part of the world, arguing that both emerge from the use of the same materials – i.e., clay's properties and human mind (Lang, 1893).

Since the aim of the Finnish school was to find the original form of a tale-type, they developed a taxonomic system to help them in their comparative study of folktales. The first version of this taxonomic index *"Verzeichnis Marchentypen"* was published by Antii Aarne in 1910 and then revised by Stith Thompson in 1928 and 1961 when it became the "Aarne-Thompson tale type index" or AT index. Recently, in 2004, the AT index was further expanded by Uther into the Aarne-Thompson-Uther index (ATU) which comprises more than two-thousands tale-types across three-hundred cultures worldwide (Uther, 2004). The approach of this index was to classify related tales from different cultures based on the presence of diagnostic elements, called "motifs", and gather them into international tale-types. Nowadays, each tale is identified with an ATU number, a title, a brief plot summary and literature references from various sources providing valuable insights into the geographical distribution of the existing variants. Furthermore, the ATU index divides these tale-types into different genres: Animal Tales (Types 1-299), Tales of Magic (Types 300 -749), Religious Tales (Types 750 -849), Realistic Tales (Novelle) (Types 850 -999), Tales of Stupid Ogre (Giant or Devil) (Types 1000 - 1199), Anecdotes and Jokes (Types 1200 -1999), Formula Tales (Types 2000 -2399).

But *what is a tale-type*? A tale-type is defined as a tale with an independent existence, a complete narrative able to stand alone as its meaning does not depend on any other tale (Thompson, 1951). Thompson, like other exponents of the historic-geographic method, assumed that all the variants collected under a specific tale-type were to be considered related (Dundes, 1997). A tale-type can be formed by a single motif or by a series of motifs that are though combined in a fixed number and in a precise order and combination. Instances of this latter case are given by Cox's analysis of Brothers Grimm's *Cinderella* (Thompson, 1951:415) where the various motifs that composed the story are listed in a fixed order (e.g., Ill-treated heroine by stepmother and stepsister – Heath-Abode – Gifts chosen by three daughters from father-- Help at grave –etc…). Tales like *Cinderella* or *Snow white*, are examples of *Märchen*, that is a tale-type which is formed by more than one motif, which plot moves into an unreal and marvelous world, with no fixed characters or locality (Thompson, 1951). Thompson then defined a motif as a minimal narrative unit, independent from other unit for its intrinsic characteristic of uniqueness, the smallest constituent in a tale able to survive during transmission. According to him, motifs can fall in three distinctive categories. The first category is constituted by "actors" (e.g., ill-treated heroine, evil stepmother), the second one is formed by the "items in the background of the action" which can be magic objects, customs or beliefs, the last and more important category comprehends the "single incidents" under which one can find the majority of motifs. Thompson argues that only this latter category *"can have an independent existence and that may therefore serve as*

true tale-types" (Thompson, 1951:416). To better understand this concept (i.e., motif=tale-type), let's consider the following example. In one of ATU genres, 'Animal tales', one can find two motifs that fall in the category of incidents: "Fox and the Crane Invite Each Other" and "The Fox Persuades the Rooster to Crow with Closed Eyes". However, these two motifs also identify two different tale-types, respectively ATU60 and ATU61. Is it possible to notice that while the motif 'Fox' (actor) can be present in both incidents, the incidents as a whole are independent from each other and therefore can be used to define a specific tale-type. Tale-types that are identified by one single narrative unit comprised more than a half of tale-types identified by Thompson and they included tale-types of Animal Tales (Types 1-299), Jokes and Anecdotes (Types 1200-1999), and The Tales of The Stupid Ogre (Types 2009-2430) (Thompson, 1951:418). Based on this definition of tale-type, as many folklorists pointed out, the border between tale-type and motif becomes quite blurred (Dundes, 1962). Also, the categories of the motifs themselves are not mutually exclusive as one cannot find an incident without an actor or an item in it. The difference between tale-type and motif only becomes significantly clearer if one considers the tale-types grouped in "Tales of Magic" (Types 300-729) as they are examples of *Märchen* (i.e., formed by a succession of motifs like *Cinderella*). However, while for tales that exhibit only one single narrative unit, the classification is relatively simple, in the case of complex tales with more than one motif, the classification turns to be difficult. In this sense, Aarne stated that depending on each individual case, it was merely up to the research which motifs consider for the classification of those tales. One could consider the nature of a particular actor (e.g., wicked stepmother), or a type of supernatural object, or the presence of a particular and striking incident in the middle of the narration. Throughout the index, Aarne had used, depending on the nature of the group of tales analysed, all of the above methods stating that *"theoretical consistency has made way for practical convenience"* (Thompson, 1951:418).

Although the historic-geographic method led to important contributions into the field of folklore, they failed to establish folklore as a scientific field for several reasons. First, the ATU index appeared to be Eurocentric showing a sampling bias as the presence of tales is evidently skewed in favor of European traditions. Consequently, when it is applied to the study of tales from other non-western regions, it results hard to classify them because either they lack of one or more of key diagnostic motifs, or their classification can be assigned to two different international types (Tehrani, 2013). Second, reconstructing the first archetype of a tale is difficult due to the fluid nature of tales as, in some regions, episodes recorded in specific tale types may separate and then converge again forming a different type, making hard to define which variations is reliable to come from an archetype (Goldberg, 1984).

A second related problem due to the fluid nature of tales, concerns a major classification issue which is the listing of the same tale-type twice in the Aarne-Thompson index (AT). Aarne himself did the error to group tales based either on the presence of the same dramatis personae or on the presence of few 'striking' incidents (motifs). This approach was criticized by Vladimir Propp in his "Morphology of the Folktale" (1968) who pointed out that different tales might have more than one diagnostic incidents, and therefore falling in more than one tale-types. For instance, if a tale presents the motif of "a stupid ogre" and a "magic object", it is merely up to the researcher the decision to classify the tale as "Tales of magic" or as "The Tale of the Stupid Ogre" (Dundes, 1962). Similarly, one can find the same theme present in both the "Animal Tales" and "Wonder Tales", as well as finding that the latter can have an animal as main character performing the actions. Consequently, the same tale-type might appear in AT index twice, with two different numbers (Dundes, 1997). Another related problem to the use of tale-type as a unit of folklore is the blending of tale-types. Similar to the occurrence of the same motif in two different tales, the occurrence of the same incident in two tale-types leads them to merge like in the case of Cinderella tale-type Aa510A (Type B and AB under Rooth's classification) which sometimes is commingled with tale-type Aa480 (The Tale of the Kind and Unkind Girls).

In this respect, Propp (1968) claimed that a distinction in tales-types is ineffective unless it is done in the light of structural features among similar tales. In fact, the classification of tale-type proposed by Aarne-Thompson is only based on the content of the story rather than on its structure, where the content is deeply subjected to variation and cannot constitute the unit of analysis (Dundes, 1962). On the other hand, the structural analysis approach suggested by Propp takes into consideration, instead of plot features, structure features which are believed to be stable and therefore can constitute a unit of analysis.

1.2 Structural Analysis

The interest in plot or structural analysis began with Aristotle who was the first one to suggest that all stories must be enough long to permit a sequence of actions to determine a change in the initial situation of a character (e.g., its fortune). He suggested that one could always identify instances of "reversal" and "recognition" inside a plot. Reversal is defined as the moment when a character's fortune is lost, and recognition as the moment when the character realises what has happened (Murphy, 2015). More recently, the Russian folklorist Vladimir Propp in his "Morphology of the Folktale" (1928) brought an important contribution into the study of plot analysis by analysing a Russian corpus of fairy tales (Aleksandr N. Afanas'ev's *Russian Folktales* (1855)), or "Wonder Tale" *(volsébnaja skàzka),* that corresponds to what Aarne and Thompson defined in their AT index as Tales of Magic (AT

300-749). In his work Propp suggested the possibility to analyse folktales using the same principles and methodologies implemented by biologists in the studying organisms such as plants. The reason is because he noticed the existence of a consistent structure in folktales that could be studied and explained in the light of the relations among each component of the text and the relation among the components and the whole (Propp, 1968). Propp introduced the term "function" to indicate the minimal constituent unit in a tale that could be extrapolated from the text. He then selected the following examples from four different tales to define the concept of function:

1. A tsar gives an eagle to a hero. The eagle carries the hero away to another Kingdom.

2. An old man gives Suncenko a horse. The horse carries Suncenko away to another kingdom.

3. A sorcerer gives Ivan a little boat. The boat takes Ivan to another kingdom.

4. A princess gives Ivan a ring. Young men appearing from out of the ring carry Ivan away into another kingdom, and so forth.

In the previous instances, it is possible to notice that in spite of the great variety of objects that can carry the hero (Ivan) to the kingdom, and in spite of the various donors that gives Ivan the object, the action or function performed remains the same: Ivan will reach the appointed place (Dundes, 1962). As such, even though the names and the attributions of the dramatis personae may change, the function performed by them constitutes an invariable element. In the previous examples, it is possible to see the variety of Donors that can be detected in the text. A Donor is a character that is encountered by the hero and gives him a difficult task to solve; if the hero reacts positively to the request of the donor then he will be rewarded with a magical agent. Now, there are different possible Donors that a storyteller can choose (i.e., Baba Jaga, helpful cow, fairy-godmother) that may act differently and rely on different means to reward the hero, yet their function remains the same: the provision of the magical agent. At this point, it is clear that for Propp the importance lies in what the dramatis personae do, rather than who performs the action or how the action is fulfilled.

From here, Propp concluded that the minimal constituent unit that could be extrapolated from a tale is the "function". Propp defined a function as "*the act of a character, defined from the point of view of its significance for the course of the action*" (Propp, 1968:21). Consequently, a function is seen as a constant element independent by who or how it is carried out while a tale becomes not only a mere sequence of isolated motifs but a precise sequence of functions. On the other hand, the various actors who perform those actions and

their attributes are subjected to change and are therefore variable. According to Propp, functions exist in a limited number of thirty-one although not all them are to be found in a tale. Some of them may be absent, yet the absence of some do not change the order of the others (Propp, 1968). Given the great variety of actors that can be found in tales, Propp reduced them into eight dramatis personae. The thirty-one functions of Propp and the eight dramatis personae are reported in Table 1.1. The functions are divided in three main groups that corresponds to the three main sequences one can find in a story: the preparatory section, where the foundations for the act of villainy are laid out; the complication phase that starts with an act of villainy and represents the actual movement of a story; the resolution phase that corresponds to the climax of a story where one find functions which will lead the hero to liquidate his own misfortune. The first eight functions are marked with a Greek letter while the remaining are given a Latin letter (see Table 1.1). Note that the initial situation in a tale is not considered as a function but merely a descriptive introduction. Nonetheless one can find episode in the introduction sections that are worth taking into consideration.

Preparation
α Initial Situation β Absentation: **A character leaves home** γ Interdiction: **The hero is warned not to do something or ordered to do something** δ Violation: **The hero violates the interdiction or carries it out** ε Reconnaissance: **The villain tries to gather information about the hero** ζ Delivery: **The villain receives information about the hero** η Trickery: **The villain tricks the hero** θ Complicity: **The hero falls victim of the villain's deception** Preliminary misfortune
Complication
A Villainy: **The villain causes harm or injury to the hero** a Lack: **The hero is lacking something so departs to look for it** B Mediation: **the hero is dispatched or his misfortune is announced** C Counteraction: **the hero reacts** ↑ Departure of the hero: **the hero departs from home** D Encounter with the Donor: **The hero encounters a Donor and receives a test/request**

E Hero's reaction: **The hero reacts to the request/test of the Donor (positive or negative way)**
F/f Provision of the magical agent/object: **the hero receives a magical agent or object**
G Guidance to a designated place: **the hero is transferred to a designated place**
H Struggle with the villain: **the hero and the villain join in combat**
I Branding of the hero: **the hero is marked or branded**
J Victory over the villain: **the hero defeats the villain**
Resolution
K liquidation of lack: **the initial misfortune is liquidated**
↓ Return: **the hero returns**
Pr Pursuit of the hero: **the hero is pursued**
Rs Rescue of the hero: **the hero is rescued**
O Unrecognized arrival: **the hero arrived home or in another country unrecognized**
L Unfounded claims: **False hero presents unfounded claims**
M Difficult Task: **the hero is presented with a difficult task**
N Solution: **the task is resolved**
Q Recognition: **the hero is recognized**
Ex Exposure of false hero: **the false hero or the villain is exposed**
T Transfiguration: **the hero is given a new appearance**
U Punishment of the false hero/villain: **the villain is punished**
W Wedding: **the hero marries and ascends to the throne**
Dramatis personae: Hero, Villain, False Hero, Donor, Helper, Dispatcher, Princess, Father.

Table 1.1: List of thirty-one functions identified by Propp. Each function is identified by a Greek or Latin letter and a brief description is reported which aims to help its recognition in the text.

Upon defining the concept of function, Propp proceeded by suggesting a new definition of tale-type as a group of tales that exhibit the same functions rather than the same traditional motifs as Aarne-Thompson index suggested. In this way, the function replaced the motif as the new minimal unit of analysis (Dundes, 1962). Dundes in his essay "From Etic to Emic Units in the Structural Analysis of Folktales" (1962), draws a parallel between the relation of

function and motif to the existing relation between emic and etic in Kenneth Pike's work. For Pike, an etic approach provides a classification system for building units that can be employed in cross-cultural comparative analysis, but is not able though to connect those units to an actual structure that can be present in the data. On the other hand, an emic approach is structural where units are specific points in the system and their definition is derived by their relation with the system itself (Pike, 1954). From Pike's work it becomes clear the distinction between structural and non-structural units and he defines the minimal emic unit as motifeme. At this point, one can draw a parallel between Pike's scheme and Propp's work. In the light of Pike's work, a function can be compared to a motifeme, while motifs (here seen as incidents) that occur in a particular motifemic slot, can be called allomotifs. The relation between motifeme and allomotifs would be the same one as the one between phonemes and allophones or morphemes and allomorph. On the other hand, the remaining two categories of motifs (actors and items) would be compared to morph or phone as etic units. In this case, to distinguish between incidents (allomotifs) and actors/items, those latter two will be called attributes. As such, an emic analysis based on the analysis of motifemes is opposed to an etic analysis based on attributes.

At this point, Dundes moves on explaining how to correctly identify which motifeme one is dealing with. Let's consider a tale where a hero is tested with the imposition of a difficult task. The hero can be faced with a task (by a donor or a villain) respectively in the "Encounter with the Donor" and "Difficult task" (see table 1.2). Consequently, if the same motif is used in these two different motifemes, a folktale's analysis based on motifs can lead to misleading results as the appearance of the same motif in two different contexts will be treated as equal (Dundes, 1962). Furthermore, if the same motif is used in two different motifemes how can one detect which motifeme is he observing? Same goes for different motifs used to describe the same motifeme. In order to define the correct motifeme and therefore understanding to which one a particular motif belong to, we have to go back on what Propp's suggested in his work, that is, one has to analyse the relation of cause and effect among motifemes as this relation defines their nature (Dundes, 1962). Let's consider an instance where the heroine is asked to clean the house, in other words, she receives a task. Now, this motif can be referred to the twelfth motifeme (Encounter with the Donor) or twenty-fifth motifeme (Difficult task). To understand which motifeme one is dealing with, it is necessary to see what happens next. If the solution of the difficult task sees the heroine receiving the magical agent then one is facing the twelfth motifeme, whereas if the heroine encounters a prince or a marriage happens, the motifeme is the twenty-fifth (see table 1.2). In this way, the identification of allomotifs can then be accurate.

XII Motifeme: Encounter with the Donor **The heroine is asked to clean the house**	XXV Motifeme: Difficult task **The heroine is asked to clean the house**
XIII Motifeme: Magical agent **The heroine receives a magic object**	XVI Motifeme: Resolution **The heroine solves the task**
	XXXI Motifeme: Wedding **The heroine marries the prince**

Table 1.2: Example of the same allomotif (cleaning the house) used in two different motifemes 'Encounter with the Donor' and 'Difficult Task'. In order to identify the correct motifeme one is facing is necessary to understand when this allomotif occurs. If after the task the heroine receives a magical agent, then the motifeme is the former, otherwise the latter.

At this point one can draw a parallel between structural analysis and motifs analysis described by folklorists. Rooth in her "Cinderella Cycle" (1951) claims that one must study a tale as an "organic unit consisting in smaller elements, themselves organic (the motifs-complexes)" (Rooth, 1951:26). Rooth defines a motif-complex as "the smallest unit or composition" that is able to stand alone in a tale. It is formed by one or more motifs (smallest elements) that neither can be preserved or existing if isolated but by being combined with one another in forming a motif-complex. Rooth reported several examples of motif-complexes that she recorded in different variants of Cinderella. For instance, one can find the motif-complexes of the "washing entrails", "bury of the bones", "the magic object found therein", "the growing tree provided clothing", etc... Rooth claimed that as well as being able to withstand alone, they are also entangled with each other. In fact, both 'washing of the entrails' and the 'bury of the bones' refer to a request to the heroine that an animal (usually a cow or a sheep) gives before being killed by the stepmother. In this case, these two motif-complexes are nothing else than what Dundes called allomotifs, which occur in the same motifeme 'Encounter with the Donor'. On the other hand, the 'magic object found therein' and 'growing tree providing clothing' are allomotifs of the motifeme 'receipt of the magical agent'. The growing tree is what Rooth would call a 'detail motif', namely a motif which cannot exist if not in relation to the motif-complexes it describes. As mentioned before, a

detail motif would be an equivalent of morph or phone, an attribute which indicates from what the magical agent (e.g., magical object or clothing) is obtained.

1.3 Phylomemetics

Originally developed by evolutionary biologists as a way to infer genetic relationships among biological organisms, phylogenetics implies the use of a phylogenetic tree (tree of life) to show historical relationships between entities, due to shared similarities (homologies) inherited from a common ancestor. In recent years, phylogenetic inference has been applied to model relationships among various cultural entities, in what have been defined as 'phylomemetics' (Howe & Windram, 2011). This led to new insights in the studies of population movements (Holden 2002; Gray & Atkinson 2003; Rexovà et al., 2006; Holden & Gray 2006; Gray et al., 2009), material culture (Tehrani & Collard, 2002; Jordan & Shennan, 2003; Darwent & O'Brien, 2006; Tëmkin & Eldredge, 2007; Coward et al., 2008), social organization (Holden & Mace, 2005; Mace & Jordan, 2005; Jordan et al., 2009), language evolution (Dunn et al., 2005; Pagel et al., 2007; Atkinson et al., 2008), and manuscripts evolution (Barbrook et al., 1998; Howe et al., 2001; Roos and Heikkila, 2009). Phylomemetics, which is here used as a shorthand for cultural phylogenetics, draws its assumption on the analogy between culture and biological evolution. According to this view, cultural traits evolve by "descent with modification" from a single ancestor, analogous to biological traits (Cavalli-Sforza & Feldman, 1981; Boyd & Richerson, 1985; Durham, 1991). Another similarity that can be found in both biological and culture evolution, is that researchers face the problem of "missing links". For instance, in both palaeontology and literature, the lack of records is one of the main challenges in detecting biological and cultural ancestry, respectively (Tehrani, 2011). To overcome this problem, evolutionary biologists assume that mechanisms of inheritance may result in the transmission of ancestral features to contemporary populations (also known as homologies). If it is assumed that cultural features are also transmitted generation after generation, it becomes possible to trace back traits to ancient societies (e.g., Tylor, 1871).

Following these concepts, parallels have been drawn between the evolution and transmission of manuscripts and genetic inheritance. In fact, before the invention of printing techniques in the 15th century, the transmission of texts was entrusted to the scribes, a group of professionals who copy texts by hand (Howe et al., 2001). Although one can expect a high-fidelity reproduction in the copying of a text, alterations were still possible and actually happened quite often both accidentally and deliberately, in the attempt to make the new copy more appealing in terms of rhythm and content (ibid.). In this sense, Howe et al. (2001) argued that the evolution of these cultural artefacts very much resembles the replication of

DNA in biology. During the process of copying, a manuscript undergoes the same processes that affect the genetic code during replication. These mechanisms knowns as 'addition', 'deletion', and 'mutation' of nucleotides, correspond in the case of a manuscript or a text, to an insertion or deletion of a word, or a substitution of a word with another (Howe et al., 2001).

Like the mutations that are accumulated in the DNA and that will be transmitted to the next genetic copy, the changes that occur in a copied text will be transmitted to the next version during the new copying process. For this reason, scholars have applied phylogenetics methods to tackle the evolution of manuscripts, by taking into account shared differences among them. The greater the amount of differences between manuscripts, more distant relately they were assumed to be. For instance, Barbrook et al. (1998) analysed the relation between forty-three manuscripts of 'The Wife of Bath's Prologue' from Chaucer's *The Canterbury Tales* using different phylogenetic methods including cladistic analysis (i.e., parsimony) and a network method known as 'split decomposition', which does not assume a priori a branching evolution of the data. They found six groups of distinct manuscripts each of them descended from a different common ancestor. These results were consistent with those found by textual scholars who did not use any quantitative tools but rather manually reconstructed the historical trees (stemmata) (Barbrook et al., 1998). However, this study importantly demonstrated the efficiency of the phylogenetic methods in reconstructing not only the evolution of biological entities using genetic characters, but also the evolution of cultural artefacts like texts, based on their similarity with genetic data.

Previously, the application of phylogenetic methods to culture has been criticised because of the greater amount of horizontal transmission present in the latter. Researchers (e.g., Dewar, 1995; Moore, 1994, 2001; Terrell, 1988, 2001; Terrell, Kelly, & Rainbird, 2001) pointed out that languages and culture evolve by blending process rather than branching, and stating a "rhizotic" nature of culture with multiple origin (Terrell, 1988; Moore, 1994). This led to two issues. The first one was if the horizontal transmission played a key role in the evolution of cultural traits, whereas the second issue was focused on the ability of phylogenetics to recover the evolutionary history of cultural traits in the presence of horizontal events. However, recently, many studies (see Collard et al., 2006 for a review) have shown how different traditions may be subjected to branching, blending, or a result of both. For instance, quantitative studies focused on analysing cultural traits variation among Africa societies (Guglielmino et al., 1995; Borgerhoff Mulder, 2001; Hewlett et al., 2002) Neolithic pottery assemblages (Collard & Shennan, 2000) and the evolution of Turkmen carpets (Tehrani & Collard, 2002), have stated branching as dominant process shaping these traditions. Conversely, a study conducted by Jordan and Shennan (2003) on Californian Indian basketry

found how blending due to geographical proximity was responsible of shaping this cultural phenomenon. The key point remains that even with a high degree of blending, phylogenies may be still reconstructed. In this respect, researchers have focused on developing methodologies able to capture and explore horizontal transmission, like phylogenetic network-based methods (i.e., NeighborNet) (Gray et al., 2010). Other instances are given by host-parasite co-phylogeny (Tehrani et al., 2010) and Bayesian techniques (Matthews et al., 2011). The co-phylogeny approach is based on the concept of co-speciation in host and parasite, commonly observed in biology. As for cultural realm, the equivalent approach is to detect how far the history of a group of entities (i.e., cultural traditions) is depended on another group (i.e. languages or geographic areas) (Tehrani et al., 2010) by inferring the dependent phylogeny (cultural traditions) on the independent phylogeny (i.e., languages). In addition, Bayesian techniques can account for a high degree of borrowing (Greenhill et al., 2009) when reconstructing ancestral states (Fortunato et al., 2006; Jordan et al., 2009).

1.4 Phylomemetics and Folktales

The use of phylogenetic inference in detecting cross-cultural relations among folktales has turned to be able to overcome problems faced by previous problems, returning robust results (Ross et al., 2013; Tehrani, 2013). The advantages of a phylogenetic approach to the study of folktales are multiple. For instance, by applying quantitative methods, it is possible to take into accounts all features present in a tale and recover ancestral relations based on similarities among set of tales rather than on few privileged motifs (Tehrani, 2013). Yet, phylogenetics will be less affected by European bias present in the ATU index as it involves explicit hierarchical modelling of relationships. In fact, in the traditional 'historic-geographic' approaches the most common motifs were considered to be more ancestral, as if each variant of a tale was an independent witness of the archetype. However, since phylogenetic analysis controls for historical relationships, if a sample is biased by having lots of closely related western European tales, those will not be treated as being independent, but will be clustered together in a clade. In this way, we can use those tales to reconstruct the last common ancestor of that particular clade, but not the entire family. To reconstruct the last common ancestor of the whole family, evidence from one clade must be combined with evidence from other clades – even if they are not as well represented in the sample. Finally, phylogenetics analysis, by incorporating horizontal transmission, will take into account contamination and convergence phenomena among tales (ibid.).

For these reasons, numerous studies have proved the utility of phylogenetic inference in studying folktales evolution. For instance, Tehrani (2013) employed three phylogenetic methods to reconstruct the history of Little Red Riding Hood. He detected a high degree of "treelikeness" among tale's variants, namely phylogenetic signal, establishing the relation

between Little Red Riding Hood and The Wolf and the Kids as two distinct tale types in Europe, while the East Asian tales were a result of diffusion that led to blending of the two types. Another example is given by Ross et al. (2013) who used methods from population genetics to analyse variants of "The tale of the kind and the unkind girls" in 31 European ethno-linguistic populations to model population structure of human cultural variation. By assessing the influence of geographic and ethno-linguistic barriers in the variation of tale's distribution, they found that geography proximity explained the most variation at individual level, followed by group affiliation and cultural ancestry. At group level, the variation was higher between groups with geography being more influent than cultural ancestry. Recently, d'Huy (2015) applied phylogenetic inference to shed light on the relationships between North American and Europe variants of the tale type "Polyphemus" and on its origin. He found a correlation between the distribution of the tale variants and Haplogroup X2, and suggested that both could be traced back to the Palaeolithic era. Silva and Tehrani (2016) analysed "Tales of Magic", applying comparative phylogenetic methods and autologistic modelling in order to infer relationships between folktales, population histories in Indo-European ethnolinguistic populations. The results showed that a minority of folktales were highly correlated with linguistic lineages supporting a vertical transmission of stories rather than horizontal transmission between nearby populations. Lastly, Ross and Atkinson (2016) analysed 45 Arctic folktales among 18 ethnolinguistic arctic groups applying genetic population methods. They discovered a high degree of horizontal transmission among nearby groups, and vertical transmission, with a correlation between folktale transmission and language lineage among those groups that diverged less recently.

These findings demonstrate that phylogenetic methods provide a powerful set of tools for testing hypotheses about cross-cultural relationships among folktales, and point towards exciting new directions for research into the transmission and evolution of oral narratives.

In this chapter, I reviewed the history of the study of oral narratives which commenced almost two hundred years ago. During this time, researchers have applied different methodologies, some of which, like the historic-geographic method, did not fully come to fruition due to methodological limitations. Thus, recently, scholars have used the framework of cultural evolution to address some of those limitations bringing interesting and important insights into the evolution of folktales. However, an important issued concerning the coding of narratives in a principled and objective way failed to be addressed. That is why, in the next chapter, I will try to address this issue by testing two set of coding rules using methods of cultural transmission theory and phylogeny. Successively, starting from the fact that Cinderella's tales have been categorized into different tale-types, that folklorists believed to be related, in Chapter 3 I will proceed to investigate the evolution of these types by coding

the different types' variants collected by folklorists, using a set of tested coding rules. The evolutionary inference will be done using phylogenetic analysis. The aim here is to understand if these tale-types are merely analytical constructs (Jason, 1970) or if instead they are real groupings in an evolutionary sense, meaning that they share a common ancestor. If this is the case, the theories formulated by folklorists about their origin and mutual relations will be tested. At last, in Chapter 4, I will try to uncover the mechanisms involved in the creation process of stories, which I believe can furnish interesting insights into how cultural units are transmitted and assembled together during the time.

CHAPTER 2

Coding Folktale Material for Evolutionary Analysis

2.1 Introduction

Both in biology and culture, finding characters that correspond to ancestral features inherited from a common ancestor (homologies) is crucial to reconstruct the evolutionary history of taxa. For this reason, one of the key steps in phylogenetics is to define the type of characters to analyse. In biology, characters are usually identified as gene sequences or morphological traits, whereas in linguistics, characters often correspond to lexical features ("cognate" word forms). However, when it comes to oral narratives defining the characters to analyse becomes challenging. As mentioned in Chapter 1, many scholars have tried to provide a set of definitions to identify which characters should be considered when studying oral narratives. For instance, Thompson (1951) suggested the analysis of "motifs" which he defined as the smallest elements in a story able to persist in tradition. However, given the fluid nature of the different categories of motifs (actors, items, and incidents) scholars from the early historic-geographic school ended up classifying tales into different groups (tale-types) by selecting diagnostic motifs based on their own individual judgement. This eventually resulted in a classification problem where the same tale-type is listed twice in the ATU index, a catalogue of more than 2000 tale-types, depending on which categories of motif its classification was based on. This issue inevitably increased the risk that both the dataset and the results were affected by individual biases and idiosyncrasies.

In recent years, scholars have successfully tackled some of the limitations of the historic-geographic method by employing phylogenetic methods (see Chapter 1). Nevertheless, they failed to deal with the underlying issue of how to code the material in a consisted and principled way. For instance, Ross et al. (2013) coded different plot features of the 'Tale of the Kind and Unkind girls' based on nine categories of tale elements identified by Roberts (1958) (e.g., nature of the place where the meeting occurs; encounters or tasks; etc…) who followed the principles of the historic-geographic method. However, these nine categories were constructed specifically for the study of this particular tale-type and thus cannot be easily replicable for other tale-types with a different story plot. Furthermore, no guidelines were provided about which specifics motifs one must code for each of the nine categories, leaving the researcher to rely on its judgment. As such, coding still remains a modern problem in studying oral traditions.

To try to solve this problem I first draw insights from the theories of structural analysis which suggested to replace the variable unit of analysis of the motifs with a new minimal unit, the so-called 'function' (Propp, 1968), which is constant and independent by who and how it is performed, and for this reason can then be extracted from the text. Later, Dundes (1962) implemented Propp's theories by bringing insights from Pike's work in linguistics. Pike clearly stated the importance to consider emic unit (structural and constant) instead of etic units (variable) (see Chapter 1). The minimal emic unit for Pike is defined as 'motifeme' which has a clear affinity to the structural unit of the 'function'. Given the fact that the term 'function' had not reached any popularity among folklorists, Dundes (1962) suggested to adopt the term 'motifeme', which will also be used throughout this study. Also, the term 'motifeme' resonates with other terms used in linguistics such as phoneme and morpheme. In fact, Dundes stated that a motifeme is described by different variants or incidents (i.e., allomotif), that in turn can fall into a particular slot of motifemes. The concept of motifeme-allomotifs will then be equivalent to phoneme-allophones and morpheme-allomorph. In turn, the motifs that qualitatively describe an allomotif, will be defined as attributes. In this latter class, actors performing an action, or the items used to perform it, are example of attributes. This results in the design of a coding system for oral narratives, where different parts of the text, motifeme, allomotifs, and attributes, are extracted. This text decomposition into three levels finds a parallel with some theories of cultural transmission regarding the way humans recall and transmit event knowledge.

Cultural transmission is defined as the process in which information is passed among individuals through different social learning mechanisms (e.g., imitation, teaching, or language). However, humans tend to memorize and transmit only certain kind of information, which when passed down from individual to individual, is subjected to biases and distortions which make it maximally transmittable. It has been suggested that when it comes to the transmission of stories, these seem to be transmitted with higher fidelity thanks to an inner property defined as 'story schemas' (Bartlett, 1932). Story schema simply suggests the presence of an underlying structure in a story, such as a folktale, around which all the details of this story are assembled. Most importantly though, this story schema is believed to be hierarchical divided into three structural levels (Mandler & Johnson, 1977; Rumelhart, 1977; Thorndyke, 1977). At the higher level, one can find the general theme, the core of the story, while at the medium level this core is subdivided into different events described by sub-goals. Finally, at lower level, one can find the actions that are needed to reach each of the sub-goals (see Mesoudi & Whiten, 2004). Stories that possess this hierarchical structure are believed to be more easily remembered and consequently more accurately transmitted (Thorndyke, 1977). Similarly, scholars of the script theory (Schank &

Abelson, 1977) suggested that scripts usually used by humans to describe every day routine events, also possessed three different hierarchical levels in their inner stereotypical structure. In other words, humans recall an event in the form of a hierarchical script, where the information contained at the higher level appears to be more stable. Mesoudi and Whiten (2004) tested the existence of this hierarchical bias in the transmission of an event knowledge using a transmission chain of participants, along which the information is passed among individuals. They confirmed that events that possess a hierarchical structure tend to be more successfully transmitted, and that information at the higher and medium level are more easily recalled compare to the lower level one, which tend to be integrated into the higher levels. Therefore, they argued that humans are keen to impose a hierarchical structure to the events they describe with a preference in recalling them using higher hierarchical levels (Mesoudi & Whiten, 2004). As such, one can draw a clear parallelism between the trimodal hierarchical structure of routine events and stories and the concepts of motifemes, allomotifs, and attributes. Under this view, the motifeme corresponds to the highest level of information (core) around which all the other components are assembled. The motifeme itself then branches into different events (allomotifs), that in turn are described by attributes at the lowest level. Furthermore, each of the three hierarchical levels are believed to be in a partonomic relation; in other words, the actions are part of the sub-goals, and the sub-goals of the general theme (Mesoudi & Whiten, 2004). In the same way in which the attributes describe an allomotif and an allomotif is part of the motifeme.

As such, the coding system here proposed, deals with first recognise the motifemes, allomotifs, and attributes, and then to code them for the phylogenetic analysis, in order to be able to reconstruct the historical relations among the tales. Now, the first step of the coding process is to identify the higher levels of a story, the motifemes, as this enables one to recognize the main building blocks. Consequently, one can then detect the allomotifs that correspond to a certain motifeme. The number of allomotifs that can serve a motifeme varies depending on the motifeme considered. For instance, when the motifeme "Villainy" is identified, the different types of villainy aka the different allomotifs, are coded. Propp identified 14 types of villainy based on the ones he found during his analysis of the Russian fairy-tales, but potentially one can find more. The important thing is to associate the allomotif to the right motifeme it describes. A dragon who kidnaps a girl and a stepmother who banishes a girl are examples of the 'Villainy' motifeme. In the first instance, the Villainy's allomotif is "Kidnap", in the second case "Banishment". Another example is given by the 'Encounter with the Donor' motifeme. In a tale, a heroine usually encounters a Donor – human, animal, or supernatural- who prepared her to the receipt of the magical agent. The Donor can ask specific requests to the heroine, as asking to be fed, helped, or even killed,

and if the heroine accepts, she will be rewarded. Each of these 'requests' is an allomotif of the Donor motifeme.

Upon detecting motifemes and allomotifs, the attributes can then be identified. As mentioned before, attributes can be equally referred to allomotifs or motifemes. In the case of 'Kidnap' as a type of Villainy, the person performing it and motivation of the act itself can be coded as attributes. The subjects performing the action, a dragon and a stepmother, are both attributes as their role is the same, that is being a villain. Even though an attribute is usually an alternative descriptor of an allomotif, there might be cases where a motifeme does not have any allomotifs, but have attributes which describe it. For instance, the motifeme "Recognition" (Q) which describes the heroine being recognised might not have any particular form as well as the motifeme "Wedding" (W). However, in the former case, if the recognition of the heroine is made by different actors, then the actors can be coded as attributes.

Second, there are episodes which cannot be referred to any motifemes because they fall in the so-called category of "connectives", namely episodes that connect different motifemes in the text. For instance, the father who asks what the heroine wants as gift is an example of the motifeme "Encounter with the Donor". The heroine usually replies she wants him to speak to the fairies (motifeme: "Reaction to the Donor"). Afterwards, the father gets lost and a captain reminds him of his task. Therefore, he will accomplish it and give the heroine the fairies' gifts (motifeme: "Provision of the magical agent") (see Chapter 1 for the complete lists of motifemes). In these instances, the 'father who got lost' and the 'captain's reminder' are connectives episodes.

Higher Level	Motifeme	A: Villainy	D: Encounter with the Donor	F: Magical agent	M: Difficult task
Medium Level	Allomotifs	A1: Kidnapping A2: Expulsion A3: Murder	D1: washing entrails D2: Bury bones D3: Taboo	F1: Magical dresses F2: Riches or Food	M1: Shoe test M2: Picking fruits
Lower Level	Attributes	Villain's identity Motivation/aim of the Villainy	Bones of who?	Provider of the magical agent	Color of the shoes

Table 2.1: Coding system based on the trimodal coding of motifemes (higher level), allomotifs (medium level), and attributes (low level). Examples are reported for each of the categories mentioned.

Unlike the ATU index, which was entirely based on the content of the tales, this methodology ought to offer an objective way to code different tales based on their structure by extracting plot features based on the definition of motifemes, allomotifs, and attributes. However, the importance of identifying correctly these characters, is strictly connected to the way they are coded for the phylogenetic analysis. Since the different levels are interdependent from each other, the absence of a character at the higher level automatically affects the presence of a character at the lower level. Here, I introduce the concept of a 'conditional-absence' among characters and 'non-conditional-absence' among characters. These two concepts reflect the way in which characters are coded in the phylogenetic analysis. In fact, a conditional-absence coding uses characters state 'gap' while a non-conditional-absence coding uses character state 'zero'. For instance, Ross et al. (2013) in the analysis of 'the Tale of the Kind and Unkind girls' treated absences as state character zero. On the other hand, Tehrani (2013) treated absences in the variants of 'Little Red Riding Hood' as either character state zero or character state gap.

The main conceptual difference between the two coding principles is that the attribution of zero-state for a character in a particular tale variant, assumes that the character state might exist but does not in this particular variant, whereas classification of a character as 'gap' assumes that the data on this character is absent and so, for the analysis, the character does not exist. Conditional-absence coding results then in a decision made by the scholar that a character cannot exist because of the state of prior character in the tale. Also, this coding technique helps to prevent the conflation of 'absence of evidence' with the 'evidence of absence', in other words the absence of a character is not treated as state zero when the logic of the narrative makes it unreasonable.

Now, when it comes to a conditional-absence among characters, one can find different classes. The first where the absence of an allomotif is conditional on the state of the motifeme. If the motifeme is absent (state zero) then all the possible allomotifs cannot logically exist and are coded as gaps. For instance, if the Difficult Task (M) does not occur in the tale, then its allomotifs that are the types of tasks (i.e., shoe test, ring test, trophy test, etc..) cannot logically exist (gap state). Consequently, the attributes of a particular allomotif (e.g., shoe colour of the shoe test) are also coded as gap. The second class regards the conditional absence between two motifemes. If the heroine is not pursued by enemies (Motifeme: Pursuit) then she cannot be rescued (Motifeme: Rescue), and therefore this last motifeme is coded as gap. Consequentially, all the allomotifs and the attributes that are referred to this motifeme, are also coded as such. The third class, regards the conditional absences between two allomotifs. In the Difficult task (M), if the 'shoe test' occurs, all the other tasks (e.g., ring task) are coded as zero. In the following motifeme Resolution of the

task (N), the shoe fits will be coded as present, however, the fit of the ring will be coded as gap. The reason is because if the 'ring test' is absent in the first place, one cannot have the resolution of this specific task. This example describes an instance where the presence of an allomotif depends on the prior state of another. At last, also the connective episodes are subjected to the same conditional-absence rule. For instance, the "Death bed test" that the heroine's father receives by his wife is an example of an introductive episode. It is coded as present or absent, nonetheless, the type of test the father receives is coded as gap if the test does not occur in the first place. Furthermore, the use of the 'gap' state is also implemented for all that information which are not given in the text. If the Difficult task in the form of shoe test occurs but the shoe colour is not specified, then this attribute is coded as gap. In contrast, in a non-conditional-absence coding motifemes, allomotifs, attributes, and connectives episode, that are not present in the text are considered as absent data for the analysis and therefore are always coded as zero.

To test these two coding principles, I combined methodologies from cultural transmission theories and phylogenetic analysis to design an experiment based on a transmission chain that resembles a branching tree, similar to what researchers used in stemmatology studies (e.g., Roos & Heikkila, 2010) where volunteers were asked to manually transcribed a series of manuscripts in order to replicate their evolution, which was then analysed with different quantitative methods. As such, this branching transmission chain was set to create artificial traditions for three of the oldest Cinderella stories, with two replications for each chain. The aim of this experiment was threefold. First, by comparing the two coding rules I hope to show which is the best way to treat the absence of a particular tale's character. Second, I wanted to test the efficiency of the coding methodology in reconstructing the tree that most resembles the original branching chain, and therefore the evolutionary history of the tale. If this resulted in the most accurate reconstruction of the evolutionary history of the tale, it would confirm which is the best way of coding the Cinderella dataset. Third, it would provide evidence that phylogenetic methods can be used to trace the evolution not only of biological species but also of cultural traits.

In the following sections, I will explain first explain the material and methods of the transmission chain experiment, then I will explain how to code the artificial stories obtained with it, using both the conditional-absence and the non-conditional-absence system. Lastly, I will compare of the outcomes of the phylogenetic analysis under the two coding rules and I will comment the results of the ancestral states reconstruction.

2.2 Materials & Methods: Transmission chain experiment

Compared to commonly used linear transmission chain this experiment employs a transmission chain with a "branching tree" structure (Fig. 2.1) which enables to artificially replicate a phylogenetic tree. This approach furnishes an advantage of knowing in advance relationships of exclusive common ancestors. For instance, it is possible to identify that the common ancestor of the stories "A" and "B" is "2a"; "C", "D", and "E" shared a common ancestor "1b" while "D" and "E" shared a more closely ancestor "2b1" (see Fig 2.1).
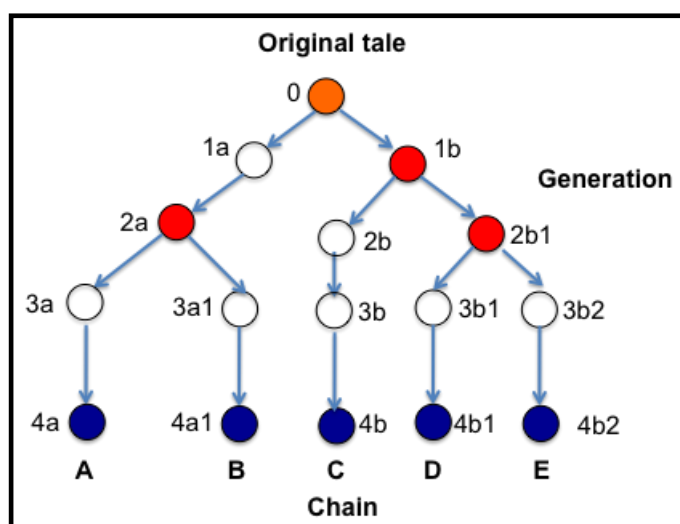
Figure 2.1: Transmission chain with a branching tree structure. At the top of the chain, the original tale is marked with the number zero and coloured in orange. It is then transmitted orally through three generations of participants until five novel stories are formed, namely tale A, B, C, D, E (in blue). Common ancestors of tales A, B, and C, D, E are marked in red.

As such, this study addresses two key points. First, it will indicate the best way to code tales. Second, it will test the validity of phylogenetic analysis. Since tales have known to be transmitted orally in the past, the variants of the story have been transmitted in the same way along a branching chain. As such, three different variants of Cinderella tale were passed orally from an individual to another according to the chain structure. Each chain consists of fifteen participants, and two chain were run per variant for a total of six chains, in order to avoid idiosyncrasies of individual memory that might be obtained in the case of one single chain. For this study, in order to reduce the risk of incomprehension due to participants' diverse English accents, each recorded story was first transcribed and then turned into an audio file which used an artificial voice with a standard British accent.

Participants were recruited among students of Durham University, including undergraduate and postgraduate students across a wide range of subjects. As the pool comprised Durham University students, participants were not screened in terms of language proficiency. In fact, undergraduate students tend to be native speakers whereas postgraduates are always

required to undertake a proficiency English test (i.e., IELTS) before enrolling to any University course.

Participation was mandatory and the reward was in form of sweets. In total, ninety people took part in the experiment.

- **Procedure**

The experiment involved the transmission of three different stories along six transmission chains. Two transmission chains were performed per story. Three oldest versions among Cinderella variants were selected. Specifically, the selected variants were the Egyptian version of Cinderella '*Rhodopis'* dated back to 1000BC; the Chinese version '*The Story of Shen Hsien'* reported by Alan Dundes (1988:75) and dated back to IX century; and the Italian version '*Cat Cinderella'* by Basile (Lo cunto de li cunti, 1634-1636). Before the experiment, I run a pilot during which a variant of Cinderella tale (length=800words) were passed down among individuals in a linear chain. The aim of the pilot was to assess if the variant could be transmitted across generations without a consistent loss of motifs. Upon observing that the tale was passed down across generation with low motifs loss (average one-two motifs per generation), the three variants of Cinderella mentioned above were edited to the same words' length (800 words) and an audio version of each of them was made. During the experiment, the first two participants in the transmission chain, "1a" and "1b", heard the original version of the tale identified in Figure 2.1 with the number 0 (e.g., Cat Cinderella). Participants listen to and recall the tale independently from one another. Each participant was told that he or she was going to listen a tale randomly selected by the software. This instruction was given to avoid the participant to feel under pressure to recall a tale he or she thought the researcher was already aware of. The participant then heard the story twice, while the researcher waited outside the room. After the listening time, they were given a distraction task consisting in drawing three abstract concepts. The purpose of the distraction task was to make the story harder to remember, in other words, preventing the participants to recall the tale too easily. If this happened, mutations may not have entered the system and since the objective was to be able to find a tree, we needed variation to evolve.

After finishing the task, each participant was asked to "recall as much of the tale as possible". The new version of the tale was recorded and transcribed into a text. The text was then turned into an audio file using the software "Text to Speech", which accuracy with the recorded version of the participant was checked by the researcher. The new recorded version was then heard by the next participant in the chain. The same instructions were given as above. Subsequently, the participant "2a" heard the audio version of "1a", and "2b" and "2b1" heard the audio version of "1b", and so on (see Figure 2.1). The experiment was not

affected by performance differences of participants, as all participants heard the same electronic voice telling out the story. Upon completion of the transmission chain, five novel versions of the tale, namely the tales at the tips of the tree branches identified in Figure 2.1 with the following labels "A"; "B"; "C"; "D"; "E" were obtained.

The complete list of the stories recalled (n=90) by generation and per chain are reported in Appendix 1.

2.3 Materials & Methods: Phylogenetic analysis of the transmission chains

Since the purpose of the experiment was to create artificial traditions, each of the individual chains were treated as a small-scale tale-type where the original story (0) is the common ancestor of the five novel stories (A, B, C, D, E) which in turn serve now as new taxa (1, 2, 3, 4, 5) (see figure 2.2 below).
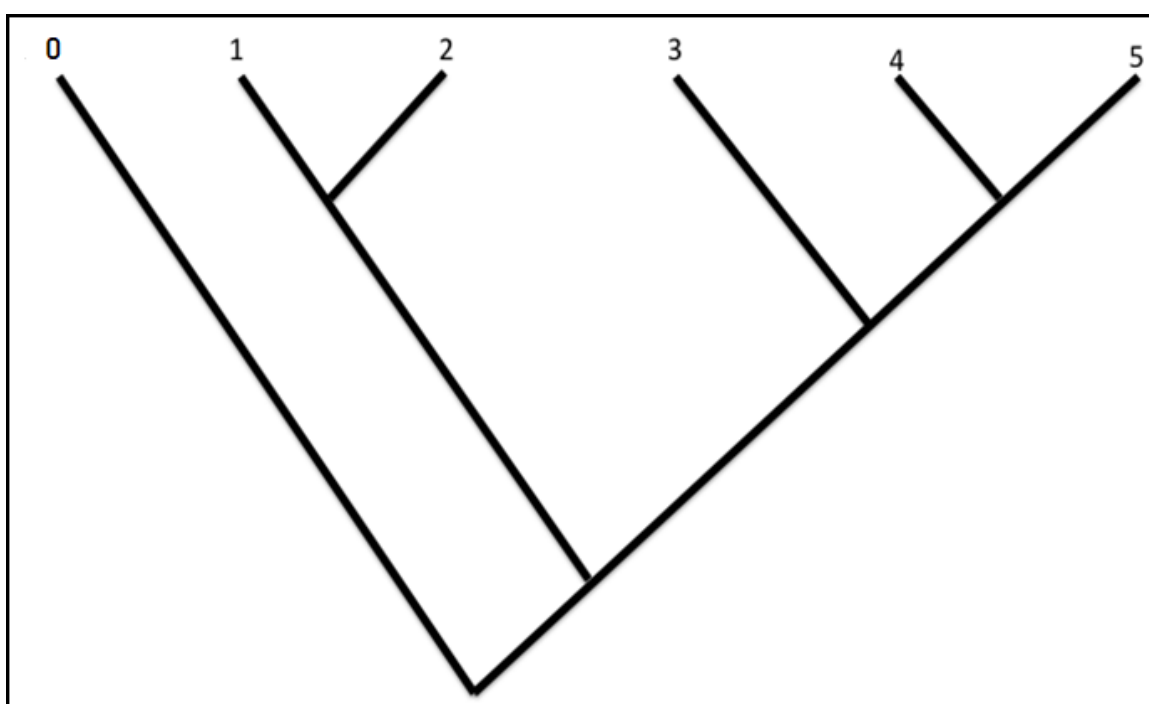
Figure 2.2: The branching transmission chain is treated as a phylogenetic tree where the original Cinderella story (0) serves as common ancestor of the final five novel stories obtained at the end of the transmission chain (taxa 1,2,3,4,5).

I analysed each of those chains for a total of six matrices. The tale features were coded in terms of motifemes, allomotifs, and attributes, and each of them served as characters for the phylogenetic analysis. The phylogenetic reconstruction for the analysis was performed in PAUP 4.0 (Swofford, 1998) using the principle of maximum parsimony. The parsimony method aims to find out the most parsimonious tree (MPT) that requires the minimum amount of character state changes to explain the distribution of the character states in the data. To assess the fit between the data and the MPT, I relied on the Retention index measure (RI) which can assess the degree of homoplasies which are non-homologous similarities, in

other words not due to common descent but to other processes (e.g., independent evolution). Proposed by Farris (1989) the Retention index is a way to establish how well the inferred tree represents correctly the state of characters by measuring the grade of potential synapomorphy, namely shared derived traits among taxa, eventually present in the tree. Derived characters are intended as traits inherited from an exclusive common ancestor which are not shared with a third taxon. As mentioned before, the original version of each tale (i.e., Rhodopis, Shen Hsien, Cat Cinderella) serves as a common ancestor of the derived tales.

Retention index is calculated by the following formulae: (h-s) / (h-m), where "h" is the maximum number of possible steps for a character; "m" is the minimum number of steps; "s" is the actual numbers of reconstructed steps (Nunn, 2011). RI provides values from 0 to 1 where values closed to 1 indicate a phylogenetically evolution of the characters that fit on the tree, while values close to zero, a complete homoplasy. Since the experiment design did not allow for the occurrence of any horizontal transmissions, as the information was passed down vertically among individuals, there was no point in using a network-based approach. Also, given the small size of the dataset, the Bayesian analysis was not performed.

The data matrixes with the relevant characters states coded for the phylogenetic analysis, for the conditional absence coding and the non-conditional absence coding, are reported in Appendix 1.

- **Example of coding data**

Here is reported one of the final tales of Chinese tale, *Shen Hsien*, obtained at the end of the transmission chain. Each of the informational characters considered in the analysis is highlighted in red. After that, from each character I extracted the motifeme it referred to, together with the allomotifs and attributes (see table 2.2).

Many years ago, a king has a daughter. The king died, and the daughter moves with her stepmother. But her stepmother is not very good. She says her to collect water from a far away place. Once she was collecting water, she found a fish, she kept feeding this fish; and the fish kept growing and growing. The fish becomes big, and the girl brings this fish to live with her, and when her stepmother noticed the fish she wants to get it, she cheated the girl and took her coat, she wears the coat. The fish only appeared when he saw the girl, so her stepmother wears her coat. She finally kills the fish and keeps his bones. A man from the sky, told the girl that the fish was killed and that the girl has to get his bones. After she got them, she has to put the bones under her bed and

magically she got gold and jewels. There was a ball, and she went to it,
wearing fancy clothes where she met a Prince. The other real daughter of the
stepmother went to the ball and she recognises her. The girl had to run, but she
left her shoe. The prince told the people to find the girl with the shoe, and he
found her and asked her to marry him. They got many goods and things, with
the bones. Finally, her stepmother is dead.

The story reported above starts with the Absentation, which is the first motifeme described by Propp. This motifeme can present three forms (or allomotifs): the absentation of elders, death of parents, which is an extreme form of former case (Propp, 1968:26), or the absentation of youngsters. In this case, the "king died", corresponds to the allomotif "death of parents". The father is in this case the attribute of the allomotif indicating who has died. After the death of the heroine's father, the villain is introduced in the person of the stepmother who orders the heroine to collect water. This constitutes the second motifeme described by Propp, called Interdiction or Order. While the heroine is addressing the order, she finds the fish, namely she encounters the Donor through which she will receive the magical agent later. The motifeme 'D' (donor encounter) is followed by the reaction to the Donor which is described by the motifeme 'E' (hero's reaction): the heroine feeds the fish. At this point, the villain, aka the stepmother, notices the fish (motifeme: reconnaissance) and decides to trick the heroine (and the fish) by taking the heroine's coat (motifeme: trickery). Here, the use of the coat is an attribute of the trickery itself, namely how the villain performs it. Since the fish appears only when it sees the girl, it falls into the stepmother's trick (complicity). Note that the fish that appears only to the girl is the attribute of the complicity motifeme, as it explains how the fish complies with the trick. After this, the stepmother kills the fish (motifeme: Villainy). In this case, the allomotif of the villainy is the "seizure of the magical agent" (A2). The fact that the stepmother keeps the bones of the fish is an attribute of the villainy. At this point, a man from the sky informs the heroine what just happened introducing the mediation motifeme (B), which describes the dispatch of the hero. In this case, the hero is not directly dispatched into a quest, but her misfortune is announced. As such, we are facing the four allomotif of the mediation: 'misfortune is announced' (B4). Furthermore, the fact that the heroine must put the bones of the fish under her bed is another attribute of the mediation. After doing so, she obtains the magical agent (motifeme F), which are pearls and jewels (allomotifs) from the bones (attribute). With those, she goes to the ball (G: going to the meeting place) where she encounters the prince. However, she is recognised (H struggle) by her stepsister (attribute). She runs home (Return) leaving behind her shoe (J Branding). The lost object (shoe) is an allomotif of this motifeme. Branding can

refer to an object lost or given, or a mark that the heroine receives. In either case, it is something that will allow the heroine to be recognised afterwards. In fact, the prince finds the girl with the shoe and recognises her (recognition) and marries her (Wedding). The stepmother is killed (U punishment). In some other stories, the stepmother is killed by falling rocks. In these instances, 'falling rocks' is an attribute of the punishment.

	MOTIFEME	ALLOMOTIFS	ATTRIBUTES
The king died	β Absentation	β death of parents	Father dies Father is a king
She (stepmother) says her to collect water	γ Order	/	Collecting water
Stepmother	/	/	Villain is the stepmother
Heroine found a fish	D: Encounter with the Donor	D: indirect request to be fed	Donor is a fish
Heroine kept feeding the fish	E: reaction to the donor	E2: positive reaction (girl feeds the fish)	/
Stepmother notices the fish	ε Reconnaissance	/	/
She cheated the girl and took her coat	η Trickery	T:Stepmother cheats the girl	Tricks: asking coat
The fish only appears when	θ2 Complicity	/	Fish appears when sees the girl

he sees the girl			
She finally kills the fish	A: Villainy	A: Seizure of the magical animal	She keeps the bones
A man from the sky told the girl etc…	B: Dispatch	B: Misfortune announce	Putting the bones under her bed By a man from the sky
She got pearls and jewels	F: Magical agent	F: pearls and jewels	By bones
There was a ball, and she went to it	G: Going to the meeting place	/	/
Stepsister recognizes her	H: struggle	H: Hero is recognized	By whom: stepsister
The girl had to run	R: return	/	/
She loses her shoe	J: Branding	J: lost object (shoe)	e.g., color of the shoe
Prince finds her	Q: Recognition	/	/

Prince asked her to marry him	Wedding	/	/
Stepmother is dead	U: punishment	/	/

Table 2.2: Informational characters of the Chinese story 'Shen Hsien', are reported in the table divided in Motifemes, allomotifs, and attributes. Note that allomotifs usually describe the motifemes. Forward slashes indicate that no motif could be found for the category considered.

Once all the motifemes, allomotifs and attributes are identified, I used the two coding systems. Here, I compare these two systems, conditional-absence and non-conditional-absence, on some motifemes, allomotifs, and attributes selected in three different stories. In the previous example we saw that the father of the heroine (the king) dies at the beginning of the tale. Let's now compare this example with other two stories. In one story, who dies is the mother while in the other no one passes away. In the table below (Table 2.3) is reported a conditional-absence coding which uses state character gap and a non-conditional-coding which uses only zeros.

Conditional-absence	Absenteeism (motifeme)	Death of Parents (allomotif)	Mother dies (attribute)	Father dies (attribute)
Story 1	1	1	0	1
Story 2	1	1	1	0
Story 3	0	-	-	-
Non-conditional absence	Absenteeism	Death of Adult	Mother dies	Father dies
Story 1	1	1	0	1
Story 2	1	1	1	0
Story 3	0	0	0	0

Table 2.3: Conditional-absence-coding and non-conditional-absence-coding are compared over three stories for the motifeme 'Absentation' and its allomotif and attributes.

The main difference between the two coding systems appears in story three, where the absentation is absent. In both systems the motifeme is coded as zero, but while in the

conditional-absence coding the allomotif and attributes are coded as gaps, in the non-conditional-absence coding are coded as zero.

Let's now consider the last example to clarify how not stated allomotifs and/or attributes are treated in the two coding systems (Table 2.4). In the story 1, reported above, the heroine loses her shoe, in story 2 she loses a shoe that makes no sound, in story 3 she loses a gold shoe. In the table below the two coding systems are again compared.

Conditional-absence	J: Branding (Motifeme)	J: lost shoe (Allomotif)	the shoe makes no sound (Attribute)	Gold shoe (Attribute)
Story 1	1	1	-	-
Story 2	1	1	1	0
Story 3	1	1	0	1
Non- conditional absence	J: Branding	J: Lost shoe	the shoe makes no sound	Gold shoe
Story 1	1	1	0	0
Story 2	1	1	1	0
Story 3	1	1	0	1

Table 2.4: Conditional-absence-coding and non-conditional-absence-coding are compared over three stories for the motifeme 'Branding' and its allomotif and attributes.

In a conditional-absence coding, attributes that are not stated clearly in the text are coded as gaps even though both the motifeme and the allomotif they belong to are present. In fact, in story 1, despite the heroine losing her shoe, no information is provided of its colour or appearance. As such, it is no possible to assess if the shoe made no sound or if it was gold. On the other hand, in a non-conditional-absence coding all allomotifs and attributes are coded as absent (zeros) even in the case of a not given information.

2.3.1 Results & Discussion: Phylogenetic analysis of the transmission chains

The results of the phylogenetic analysis are reported in the following two tables (Table 2.5 and 2.6). In each table, the code "RH" stands for *Rhodopis* (Egyptian tale); "SH" stands for *Shen Hsien* (Chinese tale); and "CC" for *Cat Cinderella* (Italian tale). In each table is reported

whether or not phylogenetic analysis was able to recover the true structure of each transmission chain which resembles a branching tree.

In the first column, it is reported if the chain belongs to the first or second generation. In the second column, it is reported as 'Split 1' the split between clade formed by taxon 1 and taxon 2 and the clade formed by taxon 3, taxon 4, and taxon 5.

Split 1: Taxa1-Taxa2 / Taxa3-[Taxa4-Taxa5]

In the third column 'Split 2' identifies the division between taxon 3 and the clade formed by taxon 4 and taxon 5.

Split 2: Taxa3 / [Taxa4-Taxa5]

The fourth column reports as 'Split 3' the split between clade formed by taxon 4 and taxon 5 and all the remaining taxa.

Split 3: Taxa1-Taxa2- Taxa3 / [Taxa4-Taxa5]

In the fifth column is reported the Retention Index of the inferred tree. When the inferred tree does not match the true tree, the Retention Index is calculated for the true tree and reported in the sixth column. The difference of tree length between the obtained tree and true was reported in the last column. This difference shows the number of substitutions per site needed to obtain the true tree from the inferred tree.

PHYLOGENETIC ANALYSIS: Conditional-absence coding		Split 1: [Taxa 1-Taxa 2]	Split2: Taxa3/[Taxa4-Taxa5]	Split 3 [Taxa4-Taxa5]	RI Obtained tree	RI True tree	Difference Tree length
Rhodopis	First chain	Yes	Yes	Yes	0.57	/	0
	Second chain	Yes	No	Yes	0.75	0.75	0
Shen Hsien	First chain	Yes	Yes	Yes	0.6	/	0
	Second chain	Yes	Yes	Yes	0.58	/	0
Cat Cinderella	First chain	Yes	Yes	Yes	0.643	/	0
	Second chain	Yes	Yes	Yes	0.55	/	0

Table 2.5: Results of the phylogenetic analysis using a conditional-absence coding. In each column is specified if the phylogenetic analysis was able to recover the considered split in the tree. The Retention index is reported for the obtained trees. In the case where the inferred tree shape is wrong, the Retention index is calculated for the true tree. The difference in tree length between the obtained tree and the true tree is also calculated.

PHYLOGENETIC ANALYSIS: Non-Conditional-absence coding		Split 1: [Taxa 1-Taxa 2]	Split2: Taxa3/[Taxa4-Taxa5]	Split 3 [Taxa4-Taxa5]	RI Obtained tree	RI True tree	Difference Tree length
Rhodopis	First chain	Yes	No	No	0.538	0.46	3
	Second chain	No	No	No	0.68	0.43	4
Shen Hsien	First chain	Yes	No	Yes	0.55	0.55	2
	Second chain	Yes	No	Yes	0.577	0.50	2
Cat Cinderella	First chain	Yes	Yes	Yes	0.647	/	0
	Second chain	Yes	No	No	0.571	0.50	2

Table 2.6: Results of the phylogenetic analysis using a non-conditional-absence coding. In each column is specified if the phylogenetic analysis was able to recover the considered split in the tree. Retention index of the obtained trees is reported. In the case where the inferred tree shape is wrong, the Retention index is calculated for the true tree. The difference in tree length between the obtained tree and the true tree is also calculated.

The results showed that when applying a conditional-absence coding, phylogenetic analysis was able to return the true tree for five chains out of six. However, the only chain where the inferred tree did not match the real tree, *Rhodopis* second chain, split between taxa 1 and 2 and 3-4-5 was still retained. Furthermore, the difference in tree length was zero indicating that the inferred tree is no worse than the real tree. The Retention Index values of the inferred trees ranged from 0.55 to 0.64 falling within the one identified by Collard et. al (2006) for cultural dataset, which is 0.42-0.70. On the other hand, when applying the a non-conditional-absence coding which uses character state zero for characters absences, only the first chain of the Italian chain (*Cat Cinderella*) was recovered with a Retention Index of 0.647, almost equivalent to the one obtained with a conditional-absence coding (RI=0.643). As for the remaining chains, the internal relations among stories were not recovered. It is worth mentioning that the values of the Retention Index of the inferred trees tend to be higher compared to those obtained for the true trees (see Figure 2.6). This indicates the hazards of using an incorrect coding as one can still be able to infer a tree with a reasonably high RI, but its topology is still wrong.

2.4 Materials & Methods: Ancestral states Reconstruction

For each of the six branching chains, ancestral states reconstruction was performed using the tool "Trace Character history" implemented in Mesquite 3.51 (Maddison & Maddison, 2018), that uses a Maximum Parsimony approach. This method allows one to infer if a character state is present or not in an ancestral node by minimizing the total number of character states changes given the tree and the observe character states. Once the consensus tree reconstructed in PAUP 4.0 is visualised in Mesquite, it is possible to analyse the character state of each of the ancestral nodes considered, namely it is possible to assess if a particular character was present or not in the node. Since each node in the tree corresponds to one version of the story in the chain, by comparing the informational state with the true character state reported in the story, one can verify the accuracy of the ancestral state reconstruction. An accurate character state reconstruction will support the ability of phylogenetic analysis to be able to trace ancestral states in traditional narratives at the deeper level in the tree.

In this analysis I considered four internal nodes which are marked with a number. Figure 2.3 shows the correspondence between the transmission chain on the right and the obtained tree on the left. Node 0 corresponds to the original story used as common ancestor. The ancestral states reconstruction was done for Node 2a which is the common story ancestor of stories RH1 and RH2; node 1b the ancestor of stories RH3, RH4, and RH5. Finally, node 2b1, the common ancestor of stories RH4 and RH5.
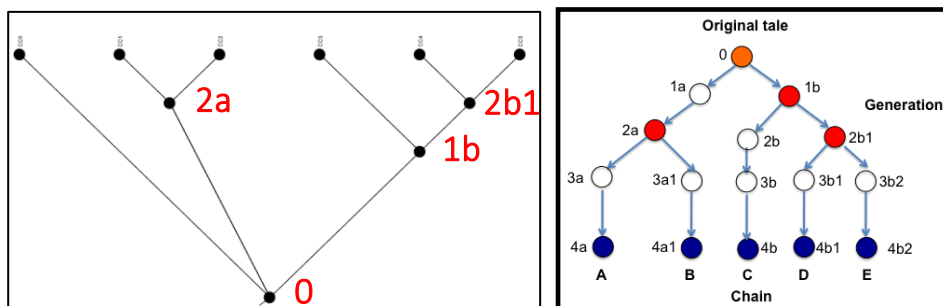
Figure 2.3: on the left it is showed the phylogenetic tree that corresponds to the branching transmission chain on the right. In red are marked the nodes subjected to the Ancestral states reconstruction (e.g., 0; 2a; 1b; 2b1).

2.4.1 Results & Discussion: Ancestral states Reconstruction

The results of the ancestral states reconstruction are reported in a series of pie charts which show in blue the percentage of successfully reconstructed states per node per chain one and two. The number of unsuccessful and indeterminate states are also displayed, respectively in red and grey. In the figures below, one can find the obtained trees for each chain with the pie charts inserted in each tree into the correct node positions (Figure 2.4).
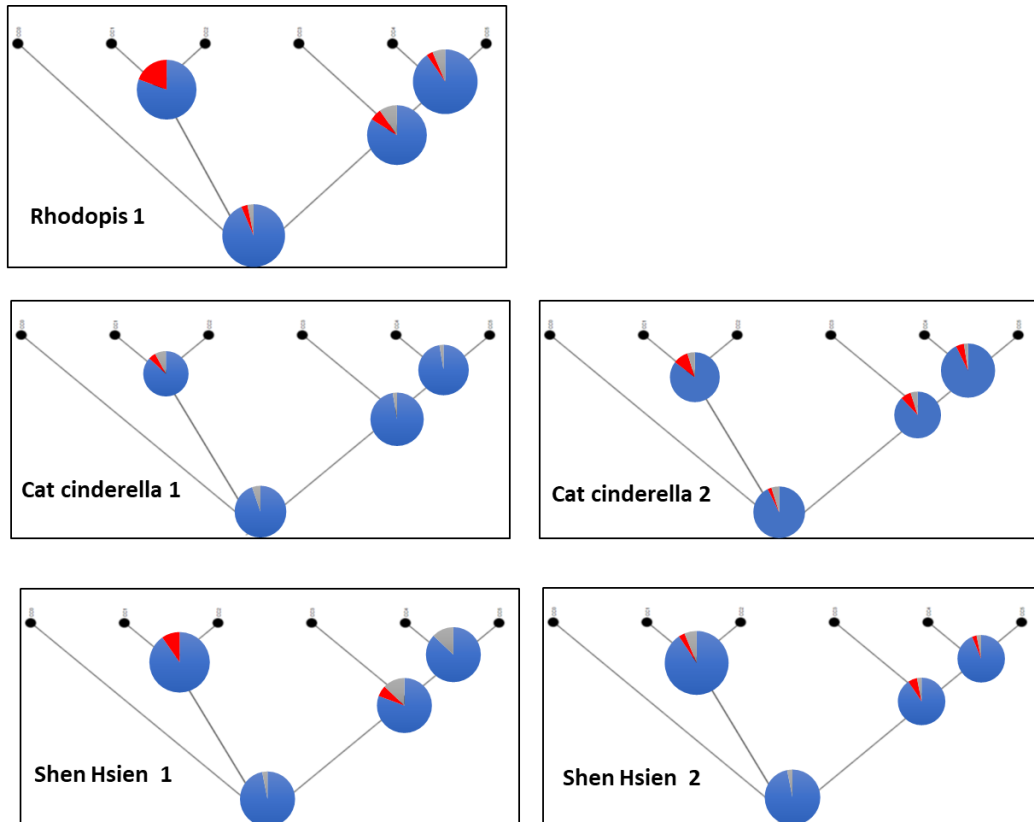
Figure 2.4: Evolutionary tree of five chains out of six (Rhodopis first chain, Cat Cinderella first and second chain, and Shen Hsien first and second chain). Characters states were inferred using Maximum parsimony ancestral states reconstruction. Pie charts sections in blue indicate the percentage of successful states reconstruction, in grey the percentage of indeterminates states, while the red indicate the percentage of unsuccessful internal nodes reconstruction.

Note that the ancestral states reconstructions were performed for only five chains instead of six. In fact, the phylogenetic reconstruction on the second chain of 'Rhodopis' could not return the true shape of the tree. For this reason, it was not possible to perform the ancestral states analysis. Overall, the number of successful states per node per chain, highlighted in blue, is higher than the number of both fail and indeterminate states (see figure 2.4). When checking for the ancestral states analysis, most of the nodes characters states were successfully recovered for all the inferred trees obtained with a conditional-coding system.

2.5 General Discussion

Coding oral narratives remains an up-to-date problem as scholars have not been able to provide a set of specific rules to adopt when coding folktales material. For this reason, I derived a coding system based on Vladimir Propp's structural analysis and from the more updated work of Alan Dundes. This resulted in a coding approach where different levels of the tale plot are coded. In short, I suggested to code motifemes – defined as the main building blocks of a tale- and their different variants, the allomotifs. At last, one should code the attributes which are descriptors of the allomotifs as well as of the motifemes. These different levels are though interdependent, and this interdependency can be described in three different levels. The first is when the absence of a motifeme influences the presence of its allomotifs, the second is when a motifeme is dependent on another one and consequently the absence of the former influences the state of the latter. Lastly, the third level is when the absence of an allomotif influences the presence of a later one. Up to date, the problem of conditional absences among characters have not been dealt with. Some scholars have adopted character states zero to describe the absence of a particular character in the story (e.g., Ross et al. 2013), while others, like Tehrani (2013), have used two different character states for absences, zero and gap. A character state zero indicates that the character might have existed but it doesn't so it is absent for the analysis. A character state gap means that the character doesn't exist because it is not logically possible (due to the absence of a prior character) therefore it is uninformative for the phylogenetic analysis.

As such, I compared a conditional-absence coding versus a non-conditional coding in the use of gap characters versus state characters zero. In order to do that, I designed a transmission chain experiment with a branching tree structure to generate artificial traditions of three of the oldest Cinderella types. These traditions were in turn reconstructed using those coding rules and applying phylogenetic analysis. I could correctly reconstruct the true shape of five chains out of six. For these chains I then tried to reconstruct the ancestral nodes state to test if phylogenetic analysis was able to reconstruct the evolution of characters state also in the case of cultural traits. The results showed that the number of successfully reconstructed states exceeded the number of fails in all the nodes considered, including those at the deeper level of the tree.

The results of this study showed two things. The first that a conditional-absence coding works better in sorting out relations within closely related tales, namely tales from the same type (family) than a non-conditional-absence coding. The advantage of a conditional-absence coding is that it avoids including redundant data and inflating the importance of absent data. Overall, this coding methodology aims to provide guidelines to researchers in order to

approach the coding of oral narratives in the most objective way possible without relying on personal judgments.

However, it is best to keep in mind that the suggested transmission chain design cannot perfectly replicate the way in which natural narratives have been transmitted during time. In fact, the cultural transmission of narratives does not usually happen one-to-one, rather an individual might hear the story from different sources and multiple times from different cultural parents (Eriksson & Coultas, 2012). This phenomenon contributes to the story longevity and stability across time as the loss of a cultural detail (e.g., motif) can still be recovered in the case of multiple sources and can also be retained quite easily in the course of time. Instead when it comes to a transmission where the information is passed one-to-one, once that information is lost cannot be recovered (ibid.).

Another feature lacking in this experiment is the absence of horizontal transmission across the chains. This has the effect of producing non hybrid stories. Instead, in the real world, stories (i.e., Cinderella tale-types) have been subjected to contamination, with episodes flowing among tale-types, as described by folklorists. This led to a more frequent appearance of connective episodes, or to a repetition of motifemes. Another consequence of the lack of contamination across chains is that at the end of the chain the final stories present a much simpler structure with motifemes that are connected with each other in a linear way.

Nevertheless, compare to previous studies on cultural transmission chains where participants were presented with a written story that they had to read and then recall in written form (e.g., Bartlett, 1932), this study fully employed a vertical transmission through oral means throughout the chain, without relying on written recall at any stage, like other studies had done (e.g., Barrett & Nyhof, 2001). The use of oral transmission resulted of extreme importance as it is a feature of similarity with how stories have been transmitted throughout human history (Sugiyama, 2001). Also, this experiment is still a good approximation of stories mutation through iterated transmission and demonstrate the importance of how plot mutations are treated by the scholars, such as taking the dependencies among the different characters into account. In the end, the experiment remains a worth statistical effort to objectively demonstrated the validity of phylogenetic methods in reconstructing the evolutionary history of oral narratives by using a coding system that can be replicated for any other tale-types, not only Cinderella. This is because it relies on the analysis of structural features of the texts (i.e., motifemes, allomotifs, attributes) which are believed to be universal as part of a 'story schema' embedded in narratives.

Ultimately, this coding approach will be applied to the real dataset of Cinderella, where I will try to reconstruct both the evolution of distinct Cinderella types and the intra-relations of tales within type.

CHAPTER 3

Phylogenetic reconstruction of Cinderella tale-types

In the previous chapter, I used a transmission chain experiment to work out a set of coding rules that can be applied when studying oral narratives. In this chapter, I will show the results obtained by applying phylogenetic analysis (NeighborNet and Bayesian inference) to the five types of Cinderella which plot features (e.g., motifemes, allomotifs, and attributes) have been coded using a conditional-absence coding system (see Chapter 2). Before displaying the results, I will explain where the empirical material of Cinderella comes from, what the different types are, and the theories that have been suggested by folklorists about their evolutionary history. After that, the aims of this analysis will be outlined together with the material and methods. Lastly, the results will be presented and discussed.

3.1 Introduction: The Cinderella Cycle

Cinderella is one of the most known and widespread international folktales with more than three hundred versions scattered around the world. For this reason, scholars have found difficult to assign all the recorded variants to one defined plot type, stating that it was more accurate to talk of a '*Cinderella Cycle*' where one can find different tale-types that are though all referred to this world wide folktale.

The first most exhaustive work on the Cinderella cycle was carried out by Marian Roalfe Cox in her comparative study entitled *"Cinderella. Three hundred and forty- five variants of Cinderella, Catskin, and Cap o' Rushes"* (1893). In this study, she suggested that all the Cinderella stories should be divided in four main groups called respectively: 'Cinderella', 'Catskin', 'Cap o' Rushes', and 'Hero tales'. She also added an extra group called 'Indeterminate tales' where she placed all those tales that could not be placed in neither of the four groups. Successively, a more comprehensive work on Cinderella was published by Anna Birgitta Rooth, professor of Folklore at Uppsala University, named "*The Cinderella Cycle*" (1951). In her work, she identified not four but five main types called type BI, B, AB, A, and C. According to Aarne-Thompson-Uther classification these types corresponds respectively to the following types: 510B, 510A, 511+510A, 511, 511B (see table 3.1). Rooth also tried to investigate the evolutionary history of the different types and their mutual relations. However, the lack of a substantial number of Asiatic variants, especially of those relative to China, shaped her conclusions regarding the origin and relations among the types. For instance, the fact that most of the Chinese versions of type B were not available during the time of her study, negatively influence her conclusions on the origin of type AB, as I will explain later on. To overcome this issue, I included an additional dataset which was drawn

from the work of Nai-tung Ting "*The Cinderella Cycle in China and Indo-China*" (1974) where he reported also Sino-Indo-Chinese variants.

Type described in ATU	Type by Rooth	Type by Cox
510B	BI	Catskin & Cap o' Rushes
510A	B	Cinderella
511+510A	AB	Cinderella
511	A	Indeterminate tales
511B	C	Hero Tales

Table 3.1: The different Cinderella tale-types as described by different scholars. In the first column the types found in the ATU index and how each of them corresponds to the ones identified by Rooth and Cox.

3.1.1 Plot sequence of Cinderella Types

The following types (BI, B, A, AB, C) show each one a different plot sequence namely a different series of motifs. Scholars have assigned each tale to a certain type matching its content to the plot sequence of the type, which is believed to be stable. Here, a brief plot is reported for each tale-type.

- **Type BI**

Type BI, which include tales of Catskin and Cap o' Rushes groups, is characterized by not being a stepmother story. The main motif of this type is the unnatural father (father=villain). The heroine is forced to married or she is asked how much she loves her father. In the first scenario, she refuses to marry her own father, while in the second she wrongly answers the question by saying: "I love you like I love salt". In both cases, she is condemned to either death or banishment. Before being killed though, she receives a disguise (animal skin) and magical clothes and manage to escape, eventually reaching a palace where she is employed as servant. During the attendance of three balls, she receives an object, usually a ring, from the prince before leaving the feast unseen. When the prince falls sick because of love, the heroine prepares him a soup and puts the object that she has received inside. The prince will then recognise and marry her. In some instances, the father is forgiven and not punished.

- **Type A**

Type A is divided in two subtypes depending on the regional area considered. The Oriental tradition corresponds to sub-type AI (i.e. *"The two orphans"*, from Kabyle) while the European one to sub-type AII (i.e. "Story of One-eye, two-eyes, and three eyes"). The difference between the two subtypes regards the protagonist of the story and the ending. In sub-type AI, the protagonists are usually a motherless heroine and her brother, while in AII the protagonist is only the girl. In any case, the protagonist/s is left to starve by the stepmother and/or is given a spinning task. A helpful animal offers to help by providing food and/or spinning. The stepsisters (one-eye and three-eyes) spy on them reporting to the stepmother about the animal who is then killed. The heroine then collects the bones of the animal and buries them. Here, depending on the geographic tradition the plot takes two different outcomes. In Asia type AI, a tree grows from the buried bones providing food or riches to the heroine, whereas in Europe (Type AII) the same tree provides fruits which a passing by prince wants to taste. The heroine is the only one able to collect the magical fruit therefore is married by the prince.

- **Type B**

Versions of type B (e.g., *Cinderella, or the Little Glass Slipper)* see a heroine being mistreated by her stepmother and stepsisters whom prevent her going to the ball by assigning her a grain sorting task (i.e., gathering peas). A magical helper, in human or animal form, usually appears to undertake the task and gives the heroine magical clothes. She can then join the ball where she meets the prince. She then rushes away from the ball and is chased by the guards resulting in her losing her slipper. After that, the prince orders that all ladies must try the lost shoe. During the shoe test, the stepsisters pretend to fit the shoe by chopping off their own toes. A bird reveals the mischief and the heroine is allowed to try the shoe and then marrying the prince; eventually the stepmother and stepsisters are punished.

- **Type AB**

Type AB (e.g., *Shen Hsien,* China) is a conglomerate of type A and B where the first act of the story corresponds to type A and the second act to type B. Consequently, one can find the motif of the stepmother who lets the heroine starve or who assigns the spinning task which is performed by the helpful animal and for that killed. Again, the hero buries the bones from which a tree grows providing, this time, magical clothes. At this point, the stepmother gives the heroine a grain sorting task which is performed by a magical helper while the heroine goes to the ball and then loses the shoe. During the shoe test the stepsisters chop off their toes to be able to fit in the shoe but a bird reveals their cheating enable the heroine to try the shoe and marrying the prince.

- **Type C**

The last type C (i.e., *The boy and the ox,* Norway) is considered to be the male version of type AI, where a hero is ill- treated by his stepmother who let him starve. A helpful animal shows up providing him food and for this reason is condemned to death. However, before being killed the hero and the animal are able to escape through three metal forests in which the hero is asked not to break any twigs (or not to speak). However, the hero breaks the twigs in each forest resulting in the appearance of threatening life monsters that are defeated by the helpful animal, which at last perishes. Before dying, it gives the hero parts of his body which turns useful when the hero has to overcome a difficult task to marry the princess.

3.1.2 Distributions and Theories

Different theories have been proposed regarding the evolution of the different Cinderella types, but none of them was conclusive. As mentioned before, Cox's work provided an extensive source of information on Cinderella Cycle, listing many variants and notes. Years later, prompted by Cox's work, Anna Birgitta Rooth (1951) reawakened the interest in the Cinderella Cycle history. Starting from the work of Cox, Rooth divided the Cinderella variants into five new types and analysed their relationships and distributions based on the theories of the historical geographic method. In order to accomplish this, she mapped each tale's content (i.e. episodes, motifs, and details motifs…) into what she defined as "geographic tradition areas" (Rooth, 1951). By studying the distribution of main motifs versus details motifs for each of the type, she drew conclusions on their evolution and mutual relationships. Below, I describe the details of her findings, which will be the starting point of our own quantitative analysis on the Cinderella Cycle.

The first type analysed is Type BI, the only story lacking a stepmother. Unlike Cox (1893) and Aarne-Thompson-Uther, Rooth considered type BI as a unique type formed by both stories of Catskin and Cap o' Rushes. She defined it as a European group, with no versions recorded outside the continent. Due to its restrictive distribution and its distinct content, Rooth concluded that this type could not bear any historic relationships with the other types, and suggested that it most likely originated during the medieval period.

As for variants belonging to Type A, these have been recorded both in the European and Asian continent. As Rooth stated, depending on the regional area considered, the plot sequence diverged resulting in the formation of two different subtypes: AI and AII. As seen before, AII is confined to Europe, mainly in the Slavonic and Baltic area, while AI is found in the oriental tradition from Near East to Celebes (Rooth, 1951). The relation between these two subtypes is explained by Rooth who believed the oriental form, AI, being older than the European form, AII. The reasons are multiple. First, AI appears to have a primitive and short plot development. In fact, it lacks the "fruit-picking test" as difficult task, that the heroine

undertakes to marry the prince, as well as the wedding sequence. Moreover, AI is void of the emphasis on a single individual character. In these stories, there is not a single protagonist rather two protagonists (a girl and a boy), while in AII the focus is centred on a single protagonist (girl). Lastly, given its quite extensive regional distribution (i.e., North Africa, India, and Celebes) it is unlikely to be a degenerative form of AI. In conclusion, according to Rooth, subtype AI would be the primitive form of Type A, that is, AII and AB are proposed to be more closely related to each other than either are to AI. If this is the case, from an evolutionary point of view we can draw this first hypothetical scenario (see figure 3.1).
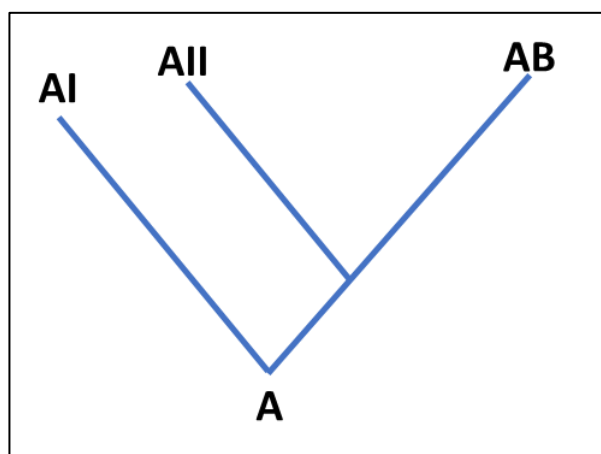
Figure 3.1: Evolutionary hypothesis for the relationship of Type A and AB which shows how from the original form of Type A in Asia, AI, AII was originated and then AB.

As for Type B, Rooth included in this group variants that have been mainly recorded in Europe with the exemption of only three tales found in Asia. Since these Asiatic tales show motifs that are in line with the European tradition of Type B (i.e., visit to the ball, loss of the shoe) Rooth concluded that Type B must have migrated to Asia recently.

Variants of Type AB have been widely recorded from Indochina to Ireland going through the Near East and North Africa. As we have seen before, Type AB is made up of two acts. The first act corresponds to the first part of Type A, whereas the second act is formed by motifs that belong to the second part of Type B. At first, Rooth thought that Type A and B were simply two different stepmother stories with no direct relationship to one another, except that the two were fused in AB (Rooth, 1951). For this reason, Rooth elaborated two main theories regarding the origin and development of these three types. The first theory sees Type AB as a mere conglomerate between Type A and B (figure 3.2a), whereas the second considers AB as a type originated in Asia and then migrated in Europe, therefore an older form than type B itself (figure 3.2b). According to this latter view, Type AB would have originated from Type A and a motif complex of the 'object which is lost' by the protagonist and 'found by chance' by the Prince (Rooth, 1951). Later, during its migration toward Europe, precisely in southern

part of the European regions, it would have faced a contraction phase resulting in the formation of Type B.
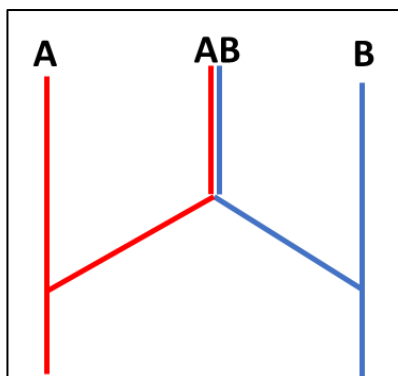
Figure 3.2a: Conglomerate hypothesis of the formation of type AB, in which this tale-type is formed as result of the process of hybridization of the two distinct tale-types A and B.
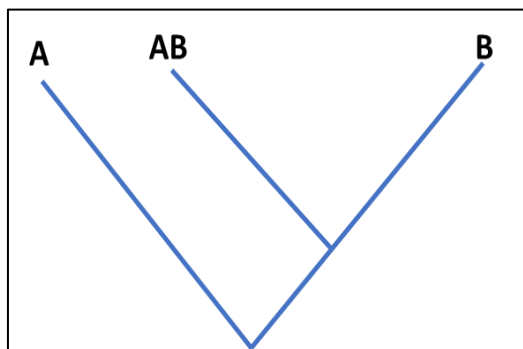
Figure 3.2b: Tale-type AB is here derived by the older form of Cinderella, Type A. Consequently, Type B was originated from a constriction of AB.

However, Rooth later concluded that AB couldn't have been a conglomerate between A and B (Fig. 3.2a) as few variants of Type B were recorded in Asia, mostly influenced by European traditions, confirming Type AB being derived by Type A in Asia (Fig 3.2b).

However, in the work of Nai-tung Ting on 'Cinderella cycle in China and Indo-China', unknown by Rooth at that time, more variants of Cinderella, including variants of Type B, were recorded in Asia, specifically in Chinese regions believed to be less exposed to the European tradition (Ting, 1974). For this reason, the hypothesis of AB being a conglomerate Type of A and B still stands.

Lastly, Rooth described Type C as the equivalent story of Type A, where the protagonist instead of being a female, is a male. According to Rooth, Type C originated in the Near East and then spread towards northern Europe, where nowadays variants are found in Scandinavian regions, Ireland, and in the Balkans. Given its accordance to Type A, Rooth concluded that this type has emerged from Type A in Europe (see Figure 3.3).
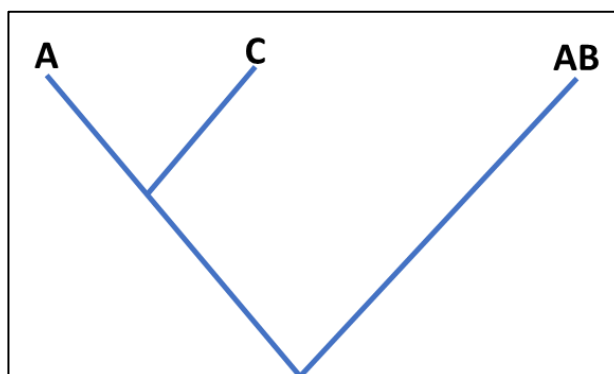
Figure 3.3: The relation among Types A and C is displayed under the hypothesis that sees Type C as a male-version of Type A. In this sense, we might expect these two types to share a common ancestor.

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3.2 Aims

As already explained, despite several studies carried on the Cinderella Cycle - including the extensive work of Rooth - the origin, distributions and mutual relationships among the different Cinderella types still remain on a theoretical ground. For this reason, my aim was to shed light on these questions by employing quantitative methods of phylogenetic analysis. Since it is known that folklorists have been assigning stories to each type based on few peculiar motifs, causing the very existence of the single type to be arbitrary if not null from an evolutionary point of view, my aim was to assess the existence of the individual types, namely finding evidence of monophyly, and then to analyse the relations among them and investigate which type represented the older form of the story.

In particular, I wanted to test the two-competing hypothesis regarding the relation among Types A, B, and AB: the first one that sees AB as an older form of the story while the second considers it as a hybrid type of Type A and B. Secondly, I wanted to establish if Type BI was a unique type formed by stories of '*Catskin*' and '*Cap o' Rushes*', or if these stories were not related to each other. Lastly, I wanted to determine the relation between Type A and C that is if these two types share or not a common ancestor (Figure 3.3).

3.3 Material

For this study, the dataset was mainly assembled using the tales collected by Marian Roalfe Cox (1893) in her "*Cinderella: three-hundred forty-five variants*", available online on the free website SurLaLune. However, few variants were selected among those collected by Rooth and available from different book sources which were found in the British Library. Also, the dataset comprised Asian variants collected by Nai-Tung Ting (1974). The criterion used to select a tale's version was as follows. First, the sources provided by Cox were used as they provided a ready accessible text to consult. Most of the sources provided by Rooth referred back to Cox's one so no conflict was created. Then for the geographic area were no tales were provided by Cox, the references provided by Rooth were used when available.

Individual tales were then divided accordingly to the five types described by Rooth. In the specific, type BI was formed by ninety-nine tales of the *Catskin* group (from number 131 to 311) and of twenty-six stories from the *Cap o' Rushes* group (from number 208 to 318). Among these stories, number 318 was not selected because a duplicate of 315. Both Type B and AB were assembled by sampling stories from the *Cinderella* group and from the material provided by Nai-Tung Ting (1974). Eighty-two stories were selected for Type B, and sixty for type AB. As for type A, of the total fifteen stories, nine were selected from *Indeterminate* group, while six were taken by other fairy-tales book collections as indicated by Rooth (1951).

As for Type C seven stories were selected among the *Hero Tales* group and three from other sources (Rooth, 1951) with a total of ten stories.

Each story is marked by a letter that indicates the belonging type ("A"," B","AB","BI","C") followed by a number which referred to the Cox list and the initial of the geographic area where it was recorded (i.e., "Eng" for England). For instance, if Cox reported story number 30 as an English story and if this tale belongs to type B, then its acronym would be B30_Eng. For the variants that were not reported by Cox but either selected from the work of Ting (1974) or by the sources indicated by Rooth (1951), the acronym was the following. First the type the tale belongs to, followed by the geographic area and unique number assigned by Ting and Rooth. For instance, the Egyptian tale number 2, identified by Rooth, of tale-type A was reported as 'A_Egy2'.

Upon selecting the Cinderella variants, 237 plot variables were coded in terms of motifemes, allomotifs, and attributes (see Appendix 2 for the full list of traits and their characters states in each variant) using a conditional-absence coding which takes into account the conditional absence among characters by using characters state gap for a conditional absence (see Chapter 2 for extended explanation). Alien tale-types that were included either at the beginning or at the end of Cinderella stories were considered as unique motifs (e.g., motif: 'Aa403') and coded as present or absent. Alien tale-types are considered all those types that do not belong to the Cinderella tradition. Specifically, tale-type Aa327 'The Children and the Ogre' offers an introduction for four variants of Cinderella, while Tale-type Aa500 'The Supernatural Helper" is present at the end of one variant. Tale-type Aa403 ('The Black and the White Bride') is instead inserted at the end of twenty-three variants: after the happy marriage, a second new act begins which corresponds to this type. These instances were treated differently from the contamination of Cinderella stories with tale-type Aa480 ('The tale of the Kind and Unkind Girls'). In this case, Aa480 motifs were borrowed and fully integrated in the middle of the tales of Type AB to the extent in which Rooth mentioned these instances as 'A+480+B'. As such, these motifs were coded normally.

In order to investigate the evolutionary history of the different tale-types, namely testing hypothesis of origin and divergence, I first employed two phylogenetic methods, NeighborNet and Bayesian inference. I also run a constraint analysis in order to test for monophyly (i.e., descent from an exclusive common ancestor) of groups of tales. Then, to assess the presence of others evolutionary processes (i.e., hybridization) that might have played a role in determining the relationships among tales, like in the case of Type AB, I applied a model-based clustering method commonly used in population structure and implemented in the program STRUCTURE 2.3.4.

3.4 Material & Methods: Phylogenetic analysis

Since the analysis involved different tale-types, which as mentioned before are often subjected to contamination due to motifs being borrowed among different tales, I chose the NeighborNet analysis employed in SplitsTree v.4.13 13 (Huson & Bryant, 2006). NeighborNet (Bryant & Moulton, 2004) is a network-based method that does not suppose a branching model of evolution; instead it offers the advantage to account for conflicting signals in the data, due to borrowing or blending (ibid.). Based on the mathematical concept of "split" (Huson & Bryant, 2006b. 7-9), this method calculates the pairwise distance among taxa based on the character data (Tehrani, 2013). This distance is used to generate weighted splits that are then turned into a network diagram by using an agglomerative clustering algorithm (Shennan, 2009). The groupings in the data are reflecting by splits, whereas the branch lengths show distance between each split (Bryant et al., 2005). If the branching process is the dominant one, the "splits graph" will be similar to a branching tree. If other processes occur, such as horizontal transmission or parallel evolution, the graph will resemble a box-like. The larger is the box area, the greater is the amount of conflicting signals resulting from horizontal transmission. The degree of reticulation in the graph is returned by two parameters of delta-score and Q-residual score both computed in SplitsTree v.4.13 13 (Huson & Bryant, 2006).

The delta-score method scores individual taxa from 0 to 1 according to the amount of conflicting signal each taxon has. The score is calculated in terms of *quartets* namely subsets of four taxa that are selected from the network. As the quartet receives a score, each individual taxon receives its final score that corresponds to the average of the scores it has in all the quartets where the it appears. The score of a single quartet is calculated as follows. Given a quartet of taxa *i, j, k,* and *l*, three sums of the path lengths are computed in the quartet $d_{ij} + d_{kl}$, $d_{ik} + d_{jl}$ and $d_{il} + d_{jk}$, where *d* indicates the distance between the four taxa of the quartet. The maximum value of these sums is called m_1, the second largest value m_2, while the smallest value is indicated as m_3. The score assigned to the quartet is then (m_1 – m_2)/(m_1 – m_3). If the value equals zero means that the distance between the taxa is tree-like, if not, the score ranges between 0 and 1. However, the normalisation constant (m_1 – m_3) might obscure some signals (Gray et al., 2010) therefore it is advisable to also calculate a Q-residual score which is a simpler score (m_1 – m_2)^2 for the quartet. This should provide a better measure of the amount of conflicting signal in the quartet as it also provides a value which is more similar to the residual one can find in standard statistics (ibid.). Note that when it comes to calculate the Q-residual score, all the between-taxa distances must be rescaled so that they average 1, as scaling distances by some constant affects the *Q*-residual score. Once all the scores are calculating for each quartet, the amount of conflicting signal of the dataset is

calculated by summing all the scores values of the quartets divided by the total number of the quartets.

As such, this analysis was performed to have a prior understanding of the amount of conflicting signals among the different types. Then, given the large size of the dataset, I implemented the use of the Bayesian analysis which allows to test the different scenarios about the origins and divergence of different types. Bayesian inference aims to calculates the likelihood of the model given the data. It does so by modifying a set of prior parameters, such as an initial random tree topology, a set of branch length, and a model of characters evolution, in what is called a Markov chain Monte Carlo (MCMC). Briefly, a MCMC operates by perturbing the initial random tree topology with the given likelihood and evolutionary model (Nunn, 2011). During the perturbation phase a new likelihood is calculated and if its value is higher than before the new tree is retained, if lower the new tree is chosen based on the difference between the likelihoods (MCMC can sometimes accept values that decrease the likelihood within a certain threshold). After the initial burn-in period, which is the time when the likelihood increases sensibly before reaching a stationary state, the trees are sampled to create a posterior distribution. Unlike cladistic analysis that returns a tree based on a single evolutionary assumption (i.e., parsimony), the set of trees sampled in the posterior distribution show the changes of the characters states in the data under different evolutionary assumptions (Tehrani, 2013). The user can then summarize the posterior distributions of trees into a consensus tree or "maximum clade credibility tree" in which to each clade is assigned a posterior probability calculated based on their frequency in the sampled trees. This method appears useful in cases of great variance in the data corpus or in the tree, as it accounts for different evolutionary model parameters (i.e., branch lengths, substitution model) (Huelsenbeck et al., 2001).

The Bayesian analysis for this study was carried out in MrBayes 3.2 (Ronquist et al., 2012).

The model settings chosen was the "standard" for morphological data (i.e., discrete multistate characters), with the character coding set to ''variable'', which means that only characters whose states varied among the taxa were included in the analysis. The analysis was run under both a gamma rates distribution and equal rates distribution. The difference between the two models is the following. When inferring phylogenies under an equal rates distribution we assume a constancy evolutionary rate among all sites, that is the probability of a state change, 1 to 0 or 0 to 1, being equal among all sites. In contrast, the gamma rates distribution assumes that the evolutionary rate across sites follows a gamma distribution. Since it is unknown which distribution rates better describe the evolution of tales, I run both analyses. To choose the better model I used a Bayes factor comparison which is calculated by the ratio of the two marginal likelihoods of the models being compared. In this case, the marginal likelihood is obtained from the harmonic mean of the likelihood values of the

MCMC samples (Newton & Raftery, 1994). A log difference of more than 5 units is considered to indicate towards the better model (Kass & Raftery, 1995). After calculating the difference of the logarithms of the two-harmonic means, I chose a gamma rates distribution as it better described the rates variance in character evolution.

After assessing the type of character evolution, two analyses were carried out simultaneously, each using four MCMC chains that were run for an average of five million generations. Trees were sampled every 1000 generations to avoid autocorrelation, with the first 25% of the sample discarded as burn-in. At the end of the run, the average deviation split frequency among the runs was checked. This is a measure of how similar the tree samples of the two independent runs are. It counts the frequency of each clade in each run of the analysis and calculates a mean and standard deviation. This is then averaged out across all the clades. As the tree samples from each run converge, the average deviation of the split frequencies approaches 0. An average deviation split frequency between 0.01 and 0.05 is considered to be a good sign that the two runs had reached convergence by the Mr Bayes manual. In our case the average deviation split frequency between the two runs was less than 0.05, indicating that the two runs had indeed converged.

In order to test hypothesis of monophyly for a group of tales, a constraint analysis was also performed in MrBayes 3.2. This analysis appears to be quite useful in order to test hypothesis of monophyly by comparing the explanatory values of different models. The first model was set as a hard or positive constraint which forces a partition to always be present in the sample trees. In this case, I force a particular type (e.g., Type B) to be monophyletic namely all the stories of that type to cluster together. In the second model, I set a negative constraint that forced the same partition not to be present in the sample trees. I then compared the harmonic mean of the likelihoods of the MCMC samples. After running the MCMC analysis for five million generations, I use the command "sump" to get the values of the harmonic mean.

3.5 Results & Discussion: Phylogenetic analysis

The NeighborNet analysis shows a high degree of reticulation and conflicting signals in the data. For this reason, it is difficult to distinguish clear groups (see Figure 3.4).

The average delta score of conflicting signals among taxa of 0.36 and the Q-residual score of 0.06 would indicate a quite tree-like structure. However, previous studies on language evolution (Gray et al., 2010) reported lower values of delta score and Q-residual score for dataset that fitted a branching model of evolution (i.e., languages) but that exhibited instances of borrowings and blending (Tehrani, 2013). The values obtained for this analysis are higher than the one reported by Gray et al. (2010) therefore we could expect a more box-like graph.
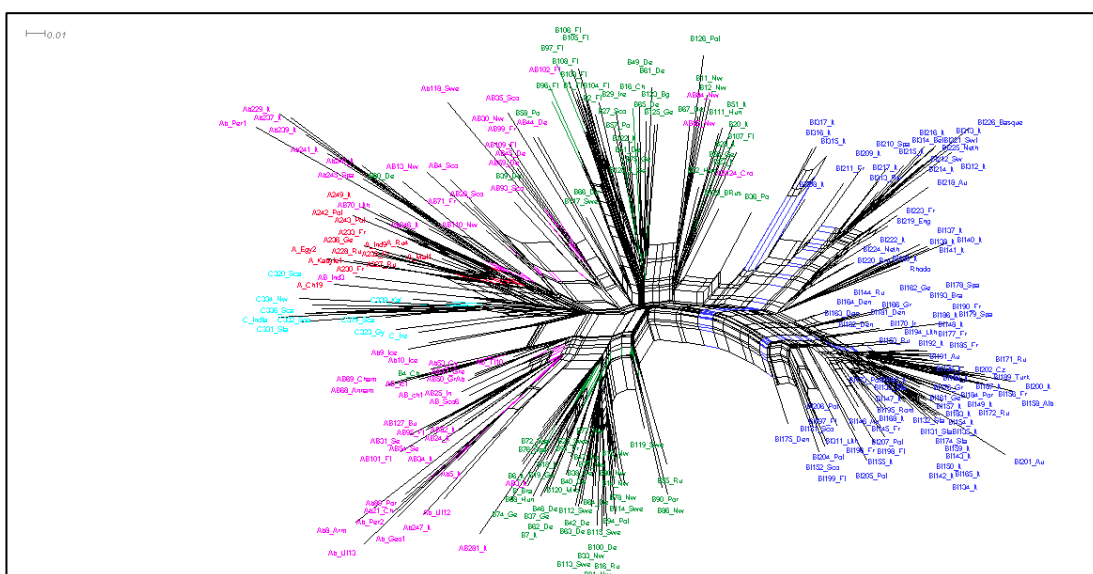
Figure 3.4: NeighborNet graph of the five types of Cinderella. Type B is coloured in green, Type AB in pink, Type A in red, Type C in light blue, and Type BI in blue.

This result is reflected by the consensus tree obtained by the Bayesian analysis where only few clades appeared to be monophyletic (Figure 3.5). Stories of Catskin, coloured in blue, appear to be moderately supported with a posterior probability of 59% which remains within the range of posterior support values obtained from cultural datasets used in historical linguistic studies (e.g., Gray & Atkinson, 2003; Gray et al., 2009). As for stories of Cap o' Rushes, coloured in yellow, those appeared well supported with a posterior probability of 96%.

These two groups were believed to be part of the same tale-type 'BI', nonetheless, they form two distinct monophyletic clades. Based on this result, it seems that these two groups of stories cannot be grouped in the same type as neither they cluster in the same group nor they share a common ancestor. Consequently, Type BI seems not be a real type (i.e., monophyletic). The clade corresponding to Type C (in light blue) is also strongly supported being present in 100% of the trees sample. However, stories of Type A (in red) and B (in

green) do not form any monophyletic groups as well as tales of Type AB (in pink). In order to confirm this result, I tried to run a constrain analysis to force each of these three types to be monophyletic. However, the outcome shows that a negative constraint, that is a non-monophyletic partition, was more supported than the positive one. At this point, since variants of AB appeared randomly distributed among tales of Type A and B, I tried to test if AB could be a source of conflicting signals in the dataset. If this turned be out to be the case, it would suggest AB being a hybrid type formed out of A and B and therefore as a type where stories exhibit a high degree of borrowings.
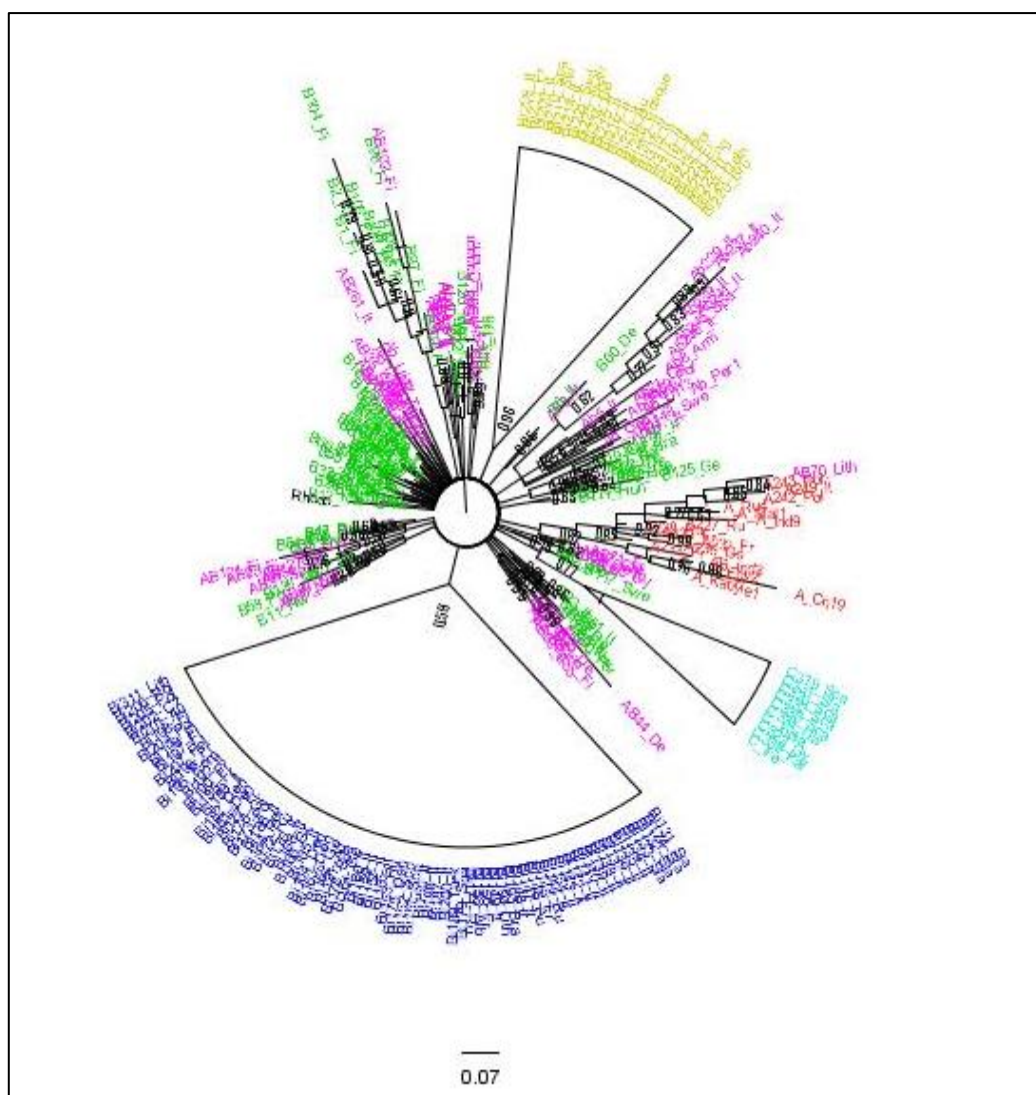
Figure 3.5: Bayesian tree of the five Cinderella types. Stories of Type B are coloured in green, Type A in red, Type AB in pink, Type C in light blue, and stories of Type BI, Catskin and Cap o' Rushes, are coloured respectively in blue and dark yellow.

To test this hypothesis, I decided to remove stories of Type AB from the dataset, and to run the phylogenetic analysis anew. The new dataset comprised 206 tax for 214 characters. Although the new NeighborNet graph shows only a slight decrease of conflicting signals (average delta score of 0.34, and Q-residuals score of 0.05) the different groups are clearly distinctively identifiable (see Figure 3.6).
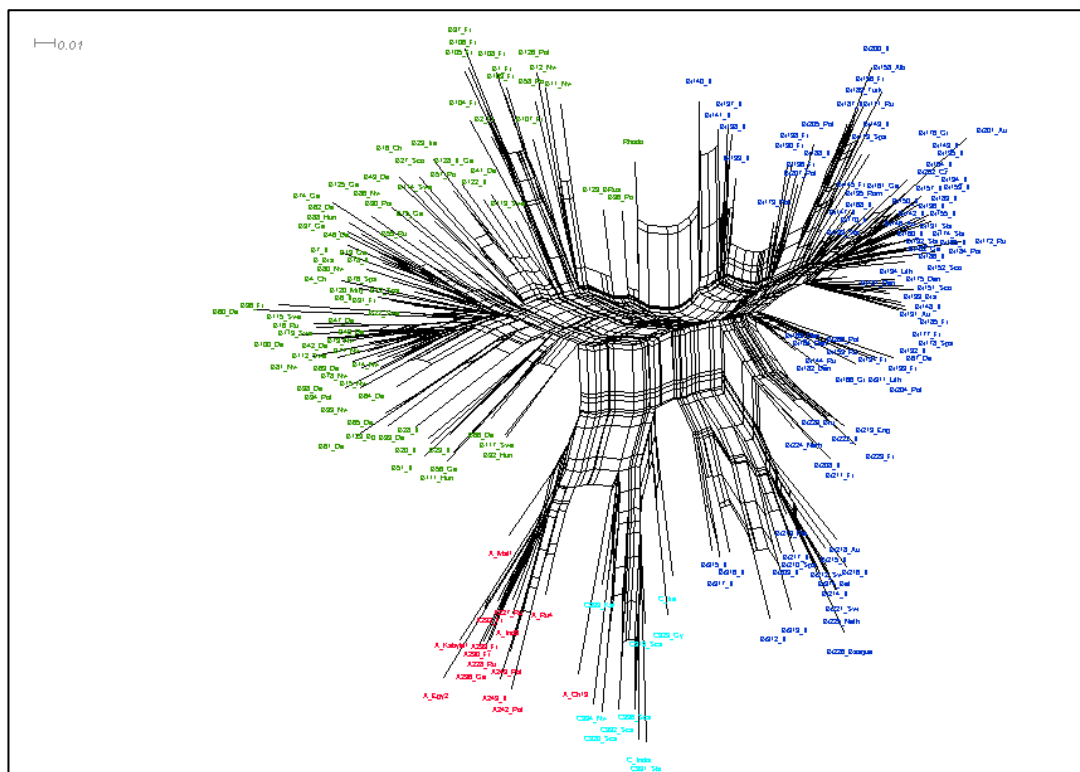
Figure 3.6: NeighborNet graph resulting from deleting stories of Type AB. The remaining four types of Cinderella are Type B coloured in green, Type A in red, Type C in light blue, and Type BI in blue.

The consensus tree returned by the Bayesian analysis also shows different outcomes (see Figure 3.7). First, stories of Catskin (in blue) and Cap o' Rushes (in yellow), form now two monophyletic groups which share a common ancestor (67%). Furthermore, the former clade (Catskin stories) is now more supported being present in 82% of the tree sample whereas the Cap o' Rushes group still remains strongly supported with 97% of posterior probability. As such, once Type AB is removed, Type BI turns to be a monophyletic group which comprises two subtypes, respectively Catskin and Cap o' Rushes. This result is consistent with the theory suggested by Rooth. As for Type A, this turns to be a monophyletic group with a posterior probability of 100% and to share a common ancestor with stories of Type C (62%). However, the clade formed by stories of Type C (light blue) is now less supported (61%). Lastly, stories of Type B (green) still appear not to cluster together. To confirm this outcome for Type B, I run a constraint analysis where two models where tested. In the first model a positive constrain for Type B stories was set, meaning that the tales were forced to cluster together, while in the second model a negative constrain was set. To see which model was more

supported, I calculated the Bayes factor which is here obtained as the difference of the marginal likelihood of the two harmonic means obtained for the two models. The positive constrain model returned a harmonic mean of -8676.183, while the negative constrain model a harmonic mean of -8596.460. The difference between the two harmonic means is between 50-100, which according to Kass and Raftery (1995), strongly confirm towards the better model of the negative constrain. This result shows that stories of Type B are still unlikely to form a monophyletic group, meaning that this tales are not descended from a single archetype, therefore from a phylogenetic point of view Type B does not exist as a "true" monophyletic grouping.
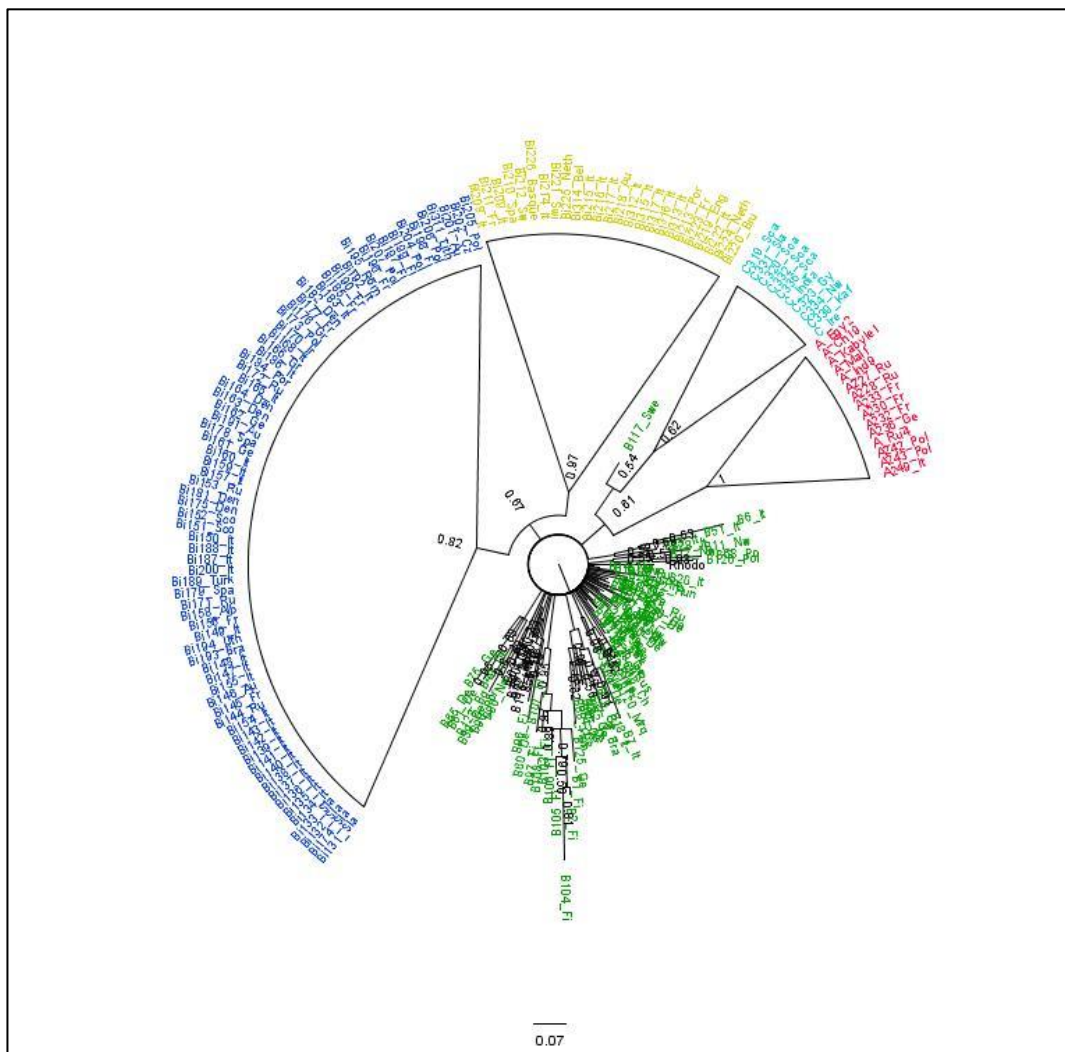
Figure 3.7: Bayesian tree of four types of Cinderella. Stories of Type B are coloured in green, Type A in red, Type C in light blue, and stories of Type BI, Catskin and Cap o' Rushes, are coloured respectively in blue and dark yellow.

From these results, we can conclude that Type BI is formed by two different subtypes (Catskin and Cap o' Rushes) that share a common ancestor. Type A is a real type as well as Type C. They do share a common ancestor therefore the historic relation between these two types suggested by the folklore literature is confirmed. However, stories of Type B do not form a monophyletic group, and neither do stories classified as AB, which seem to be a hybrid type formed due to recombination between stories of A and stories of what was called Type B.

Overall, these findings seem to indicate a scenario of reticulate evolution due to hybridization among the tales. As such, phylogenetic methods appear not well suit to correctly identify and test hypothesis of reticulation and even the use of phylogenetic network models, like NeighborNet, present several disadvantages. In fact, it has been suggested that these methods often rely heavily on graphical visualization and distance measure used, plus it is difficult to interpret the clustering results in terms of significance; for this reason, they should be only used as exploratory analysis (Pritchard et al., 2000). However, tools from population genetic studies might come to a help in dealing with reticulation phenomena. In fact, scholars of population genetics often face problems connected with admixed populations like in the case of the analysis of hybrid zones (Barton & Hewitt, 1989), or in the study of ancestry between two different ethnic groups (e.g., Guglielmino et al., 1990). When it comes to identify population structure in low differentiated populations, distance-based models are usually replaced by the use of model-based methods. In particular, one well-established and widely used model-based clustering method which implements a Bayesian clustering is the one implemented in the free software STRUCTURE 2.3.4. (Pritchard et al., 2000) which turns to be quite effective in investigating human population structure using multilocus genotype data (e.g., Pritchard et al., 2000; Rosenberg et al., 2002). The advantage of the use of STRUCTURE 2.3.4. is its ability to detect population structure even when populations are interbred, which can turn useful in this current study as different Cinderella tale-types (i.e., populations) appear to be hybridized.

3.6 Material & Methods: Model-based clustering method (STRUCTURE 2.3.4)

To assess whether the clades indicated in the phylogenetic analysis were supported and to test if Type AB was a hybrid type, I used a model-based clustering method implemented in STRUCTURE 2.3.4 by Pritchard et al. (2000a) widely used in population genetics to infer population structure by using multi-locus genetics. This method is a useful alternative to the NeighborNet analysis, which only provides a visual representation of conflicting signals in the data, as it allows the scholar to identify the presence of distinct populations (called K) and to assign individuals (tales) to these populations (types). This model assumes a Hardy-Weinberg equilibrium within populations and a linkage equilibrium between the loci of such populations (Pritchard et al., 2000). Once a population structure is introduced, the model tries to identify populations and assign individuals to such populations in a way to maintain the equilibrium (ibid.). Each K cluster (population) is described by a certain set of allele frequencies where X represents the genotypes of the sampled individuals (tales' variants), Z is the unknown population (tale-type) of origin of the analysed individuals, and P denotes the unknown allele frequencies (motifs frequencies) in all populations. The model attempts to estimate the value of Z and P by adopting a Bayesian approach and assign priors to $Pr(Z)$ and $Pr(P)$. Given X, values of Z and P are given by the posterior distribution $Pr(Z, P|X) \sim Pr(Z)Pr(P)/Pr(X|Z, P)$ obtained by using a Markov chain Monte Carlo (MCMC). STRUCTURE implements different ancestry models for individuals, among which one can find the admixture model. The admixture model allows individuals to draw part of their genome from more than one ancestral population (K), in other words to exhibit mixed ancestry. This model appears to be more flexible when accounting for real population where admixture is usually present (Pritchard et al., 2000). STRUCTURE also accounts for allele frequency with two different models. The first one considers allele frequency in each population to be independent therefore to be quite different from each other. The second model accounts for correlated allele frequencies where the frequencies are expected to be similar. According to Falush et al. (2003), correlated allele frequencies model should be use as default, as it can achieve better performances as the independent frequencies model can lead to the merging of two populations that share similar allele frequencies. However, it can lead to an overestimation of K compare to the independent frequencies model (Pritchard et al., 2000). Since this study deals with cultural data, the term allele-frequencies used to refer to genetic data will be substitute with motifs-frequencies.

During the analysis, in order to assess if the Markov chain Monte Carlo (MCMC) has converged and structure has therefore been detected, the value of the statistical parameter 'alpha', which indicates the relative admixture levels between populations, has to be constant with range values <0.2. If this doesn't happen it is a signal that there might not be a real structure in the dataset. Moreover, if the sample of individuals assigned to each

population is more or less the same, it might be another signal of poor population structure. On the other hand, if a sample of individuals is strongly assigned to a cluster or another, it is a strong evidence towards a real population structure (Pritchard et al., 2000).

One important issue when running STRUCTURE, is to determine which value of K reflects the real population structure present in the data. Pritchard et al. (2000a), suggested that the correct value of K is usually the smaller one that can capture the most structure in the data. At the end of the MCMC run, the analysis output a line called "Estimated Ln Prob of the Data" or ln Pr(X|K). It is important to make sure that Ln Pr(X|K) values across the same K are constant, therefore it is suggested to run independent runs for each K. After that, the outputs of each run are zipped and upload on STRUCTURE Harvester (Earl, 2012) which is an online program for visualizing STRUCTURE output and implementing the Evanno method and the non-parametric test, to determine the correct estimation of the number of clusters (K). However, there is an ongoing debate among researchers about which one of them is the proper method to use to assess the real value of K. The Evanno method designed by Evanno et al. (2003) compute the DeltaK which shows a peak at the 'true' value of K. It is considered the most accurate way to determine the value of K even though can lead to an underestimation of it. The non-parametric test suggested by Pritchard et al. (2000a) simply uses the mean of Ln Pr(X|K) to assess K which can bring to an overestimation despite being less conservative.

At the end of the analysis, for each K value, the analysis provides the summary plot of Q (estimated membership coefficient for each individual for each cluster) where each individual (tale) will then be represented by a vertical line which segments are coloured based on the tale's estimated membership in the K clusters considered. For instance, a K=3 assumes the existence of three populations aka three tale-types which will be coloured in three different colours. A tale might be completely assigned to population number 1 (one colour), or having membership in both populations 1, 2, and 3 (expressed in three distinct colours). If this is the case, it is a signal of a hybrid tale.

Furthermore, it is possible to print out information of Q for the corresponding K where it is possible to see the percentage of assigned individuals for each K clusters. As said before, if the percentage of inferred ancestry for each K cluster is strongly detected, namely each individual is assigned to a determine cluster, it is a signed of population structure.

In the present analysis, I chose an admixture model and motifs frequencies correlated as suggested by Falush et al. (2003). This model is usually used as default when studying closely related populations as they are assumed to have similar (genetic) frequencies. As such, I am making the same assumption in regard of Cinderella tale-types as they all refer to the same 'plot synopsis', and have in common many motifs.

As for the choice of Ks, Evanno et al. 2005 suggested to test the Ks values from 1 or 2 to the expected number of K plus 3. Since we expected the existence of five tale-types (K=5), I set a range values of K from 1 to 8. For each value of K, 10 replicates were run. Lambda, the parameter of allele frequencies, was set to 1 as indicated by the manual. Since STRUCTURE manual suggests a burn in length of 10,000-100,000 and runs steps of same range, I set a burn-in length of 50,000 generations and MCMC run length of 100,000 generations. With this setting we could reach convergence among the runs.

After the completion of the analysis, I chose to report the results for every Ks values commenting the respective ancestry plot (Q) based on qualitative criteria of the folklore literature, in line with what Rosenberg et al. (2002) did in their study on the genetic structure in human populations. I showed a summary plot of Q for a series of values of K, precisely from K=2 to K=5. However, since 10 replicates were run per single K, either a consensus run had to be calculated or the one with the highest probability had to be reported. I chose then to report the K run with the highest probability among the 10 replicates per K. This choice was also supported by a visual investigation of all the ten runs across Ks which gave the same result of the one reported in the text. Then, I upload the K runs on STRUCTURE Harvester (Earl, 2012) to determine the best value of K that better describe the data by computing both the non-parametric method of the mean of Ln Pr(X|K) and the Evanno method.

3.7 Results & Discussion: Model-based clustering method (STRUCTURE 2.3.4)

The output of STRUCTURE is represented by a series of bar plots for each K cluster selected. The MCMC analysis reached convergence as the alpha value was below 0.2, also the Ln Pr(X|K) varied between runs while being stable within. Since ten runs were run for each K, the run with highest probability for a given K was chosen. Below, I will show the results obtained with the admixture model and motifs frequencies correlated.

- **Admixture model – motifs frequencies correlated**

At K=2, only two populations are inferred and the dataset is split between what it is possible to recognised as Type BI (in red) and the rest of the Types B, AB, A, and C, in green. This result is consisting with the literature as tales that belong to Type BI (Catskin and Cap o' Rushes) are non-stepmother stories, rather they exhibit motifs concerning the unnatural relationship between the heroine and her father.
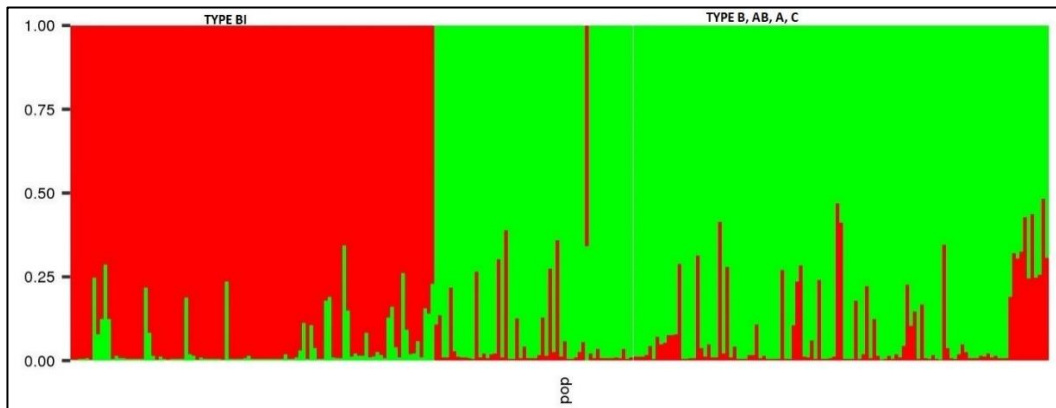
Figure 3.8: At K=2, two populations are assumed and tales result divided in what is recognizable in Type BI and the rest of the Types B-AB-A-C.

At K=3, stories that belong to Type BI still appears to have membership in the same cluster (red) while the remaining three types split up in two main clusters. Type B (in green) is separated by Type A and C both forming one population (blue), whereas tales from Type AB appear to be admixed with individuals showing membership from different populations. Specifically, these stories have proportions from cluster B and A/C and this appear to be consistent with our previous findings which suggest Type AB being a hybrid type (Figure 3.9).
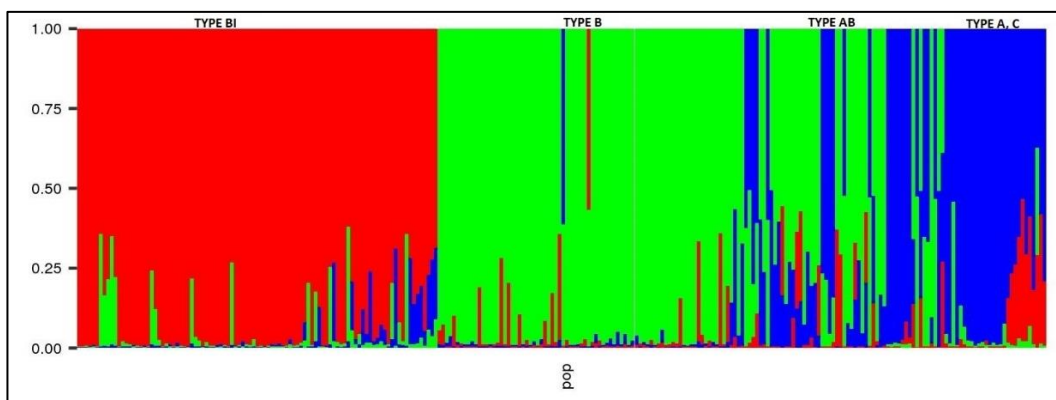
Figure 3.9: At K=3, tales result divided in three populations: BI, B, and A+C. Stories of type AB result admixed having membership in B and A/C.

At K=4, stories that belong to Type BI are now split in two subpopulations that correspond to Catskin and Cap o' Rushes groups (red and yellow). Stories of Type B still forms a unique cluster in green even though some individuals seem contaminated. Stories that belongs to Type A and C still form a unique cluster (blue) while individuals from AB appear to be quite admixed having membership that belong to population/type B and population/type A+C (Figure 3.10).
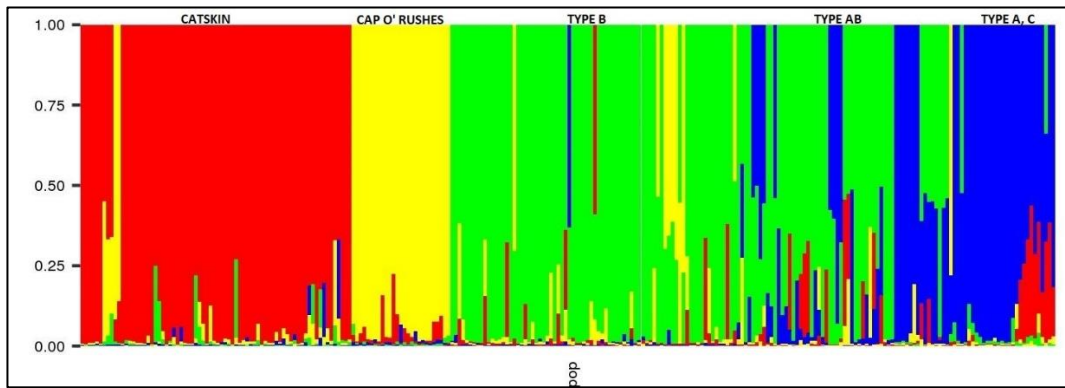
Figure 3.10: Plot of K=4 where it is possible to recognised four clusters: Catskin (red), Cap o' Rushes (yellow), Type B (green), Type A and C (blue). Individuals of Type AB appear to have membership in B and A (green and blue).

At K=5 it is still possible to identify population structure for Catskin and Cap o' Rushes groups (red and yellow respectively). Stories of Type A and C still forms a unique cluster in blue and the admixture in stories of Type B increases. As for Type AB, it also looks heavily admixed with individuals having multiple memberships from population of Type A, B and C (Figure 3.11).
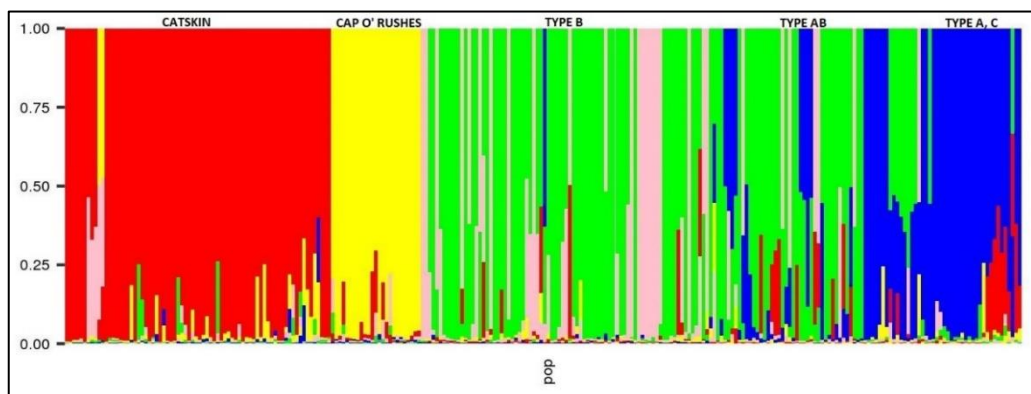
Figure 3.11: At K=5, Catskin and Cap o' Rushes clusters are still recognized in red and yellow as cluster formed by A and C (blue). Individuals of Type B exhibit now more contamination (green) while tales of AB still show both memberships of A (blue) and green (B).

Upon assessing the membership of each individual tale to the clusters considered, I wanted to determine which was the K value that better describe the population structure in the dataset. To do so, I used two methods. The first was the non-parametric test which showed a linear increase in ln PR (X|K), which is a signal of the presence of structure in the data, until the "more-or-less plateaus" around K=4-5. As such, the uppermost value of K should be K=4 (see Figure 3.12). However, since this method can overestimate the value of K, I also computed the DeltaK under the Evanno method (Evanno et al., 2005). Based on this, DeltaK shows a peak at K=2 (Figure 3.13).
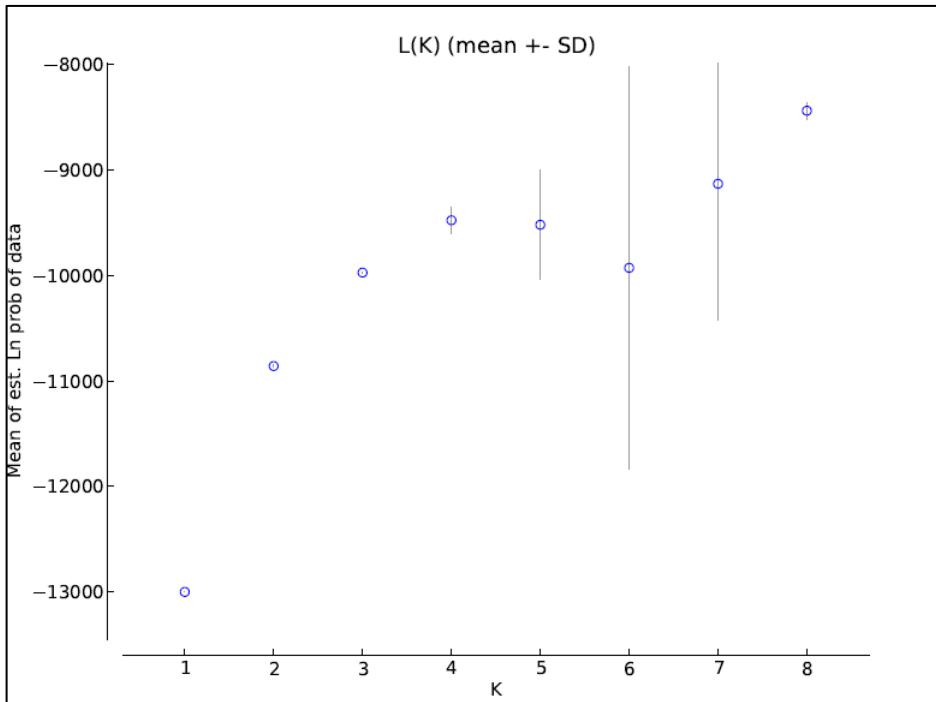
Figure 3.12: The mean of the Ln probability of the data shows a pick at K=4 before reaching a plateau.
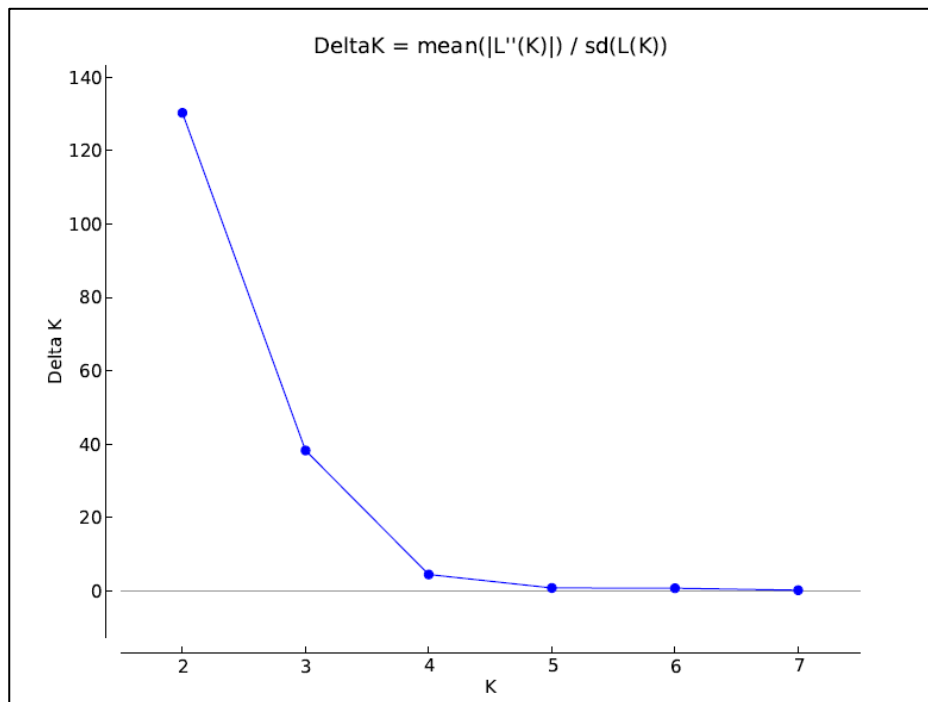
Figure 3.13: Delta K computed with the Evanno Method shows a pick at K=2.

These results showed how the non-parametric test and the Evanno method returned two different values of optimal K (K=4 and K=2). Since it has been suggested that the Evanno method tends to identify the highest level of population structure at the expense of an underestimation of K (Waples & Gaggiotti, 2006) when there is a hierarchical structure, we can conclude the following points. First, it is likely to expect a strong population structure at K=2, as identified by DeltaK, since this partition divides stories of Type BI (non-stepmother stories with a heroine-father unnatural relation) from the rest of the types which have in common a more similar plot (i.e., a mistreated girl/boy by stepmother). However, even when the value of K increases to 3 and 4, it is still possible to assign tales to identifiable clusters. In fact, at K=3, there is a clear distinction between Type A-C and B, and the admixed stories of AB, while at K=4, Type BI results divided in its two subtypes (Catskin and Cap o' Rushes).

3.8 General Discussion

In this chapter the historical relationships among the five Cinderella types (A, B, AB, BI, and C) were investigated using a variety of methods, including phylogenetic methods and model-based clustering methods. Despite not being able to assess which was the older form of Cinderella story, important findings were assessed.

The first result was obtained with the NeighborNet analysis, which is useful to visualise the amount of conflicting signals in the dataset and to obtain a prior idea of the main groupings in the data. However, the graph showed a high degree of conflicting signals among the tales which appear not to form clear groups, apart from stories of Type BI. To further test the hypothesis of origin and differentiation of these types, a Bayesian analysis was performed. The consensus tree retuned by the analysis showed only three groups of tales forming monophyletic clades, meaning sharing a common ancestor. The first clade was formed by stories identified by Cox as *'Catskin'* stories, while the second one consisted of stories of *'Cap o' Rushes'*. Both groups were considered to belong to the same tale-type, BI, by Rooth. However, since these two clades appeared not to share any common ancestor, Type BI could not be considered a unique type. The remaining monophyletic clade comprised stories of Type C. Stories of Type A, B, and AB, did not form any monophyletic groups meaning that neither of those types could be considered being real. As such, neither of them could constitute an older form of Cinderella story as suggested by the literature. In this respect, to further investigate the matter of origin of Cinderella, it would be advisable to use time-calibrated phylogenetic tree. Plus, in the current analysis the trees obtained by the Bayesian analysis were unrooted. The direction of change from ancestral to derived forms can only be ascertained using rooted trees. In this case, we lacked an appropriate outgroup taxon that could be used to root the whole Cinderella family.

At this point, since it appeared that stories of AB were scattered among stories of A and B, I tested the hypothesis of AB being a hybrid type namely formed out of stories of Types A and B. If this turned out to be the case, AB could have been the source of conflicting signals in the dataset. To test this, I removed stories of AB from the dataset and re-run both the NeighborNet and the Bayesian analysis. This time, *Catskin* and *Cap o' Rushes* clades appeared to share a common ancestor, as well as stories of Type A and C. As such, it is possible to confirm the classification proposed by folklorists. In particular, Cox (1893) suggested that stories of Catskin and Cap o' Rushes were two different groups, while both Rooth and the ATU index reported them as being a unique type (i.e., BI and 510B). These findings show how they were all partly right, as these two groups are distinct but they do share an exclusive common ancestor. As such, Type BI can be considered as a genus comprising two species (Catskin and Cap o' Rushes).

As for Type A, Cox (1893) classified these stories as Indeterminate while the ATU index reported them as forming a unique type with Type C. I found that both groups are monophyletic groups with Type A sharing a common ancestor with Type C and story of Type B number 117, which is a Scandinavian story contaminated by motifs of Type C (e.g., flight with the helpful animal trough three metal forests). The finding that Type A and C appear to share a common ancestor, is consistent with the qualitative readings of the tales, which suggests stories of Type C being male-versions of stories of Type A (Rooth, 1951).

Unlike what suggested by folklorists, stories of Type B did not form any monophyletic clade and therefore from a phylogenetic point of view this group cannot be considered to be a distinct type. This result can partly be explained by the internal flaws of the classification system used by traditional approaches (i.e., historic geographic method). Being based on only few striking motifs, folklorists ended up classifying a lot of unrelated stories under the umbrella of Type B, which had in common only the part of the heroine joining the ball, losing her shoe and marrying the prince. In fact, the subgroup of the Finnish stories of Type B presents a totally different beginning from the usual 'mistreated stepdaughter' one. In these stories, the heroine is not ill-treated and confined in the household by the stepmother and stepsisters, rather she wants to become the King's maid so she sets out to do so.

These results seemed to confirm the hypothesis that AB is a type which was generated out of a hybridization process between a group of stories traditionally categorised as Type B and stories of Type A. To further investigate this hypothesis, I used a model-based clustering method implemented in STRUCTURE 2.3.4, which assign the membership of each individual (tale) to populations (k) which in this case are the tale-types. The results obtained confirmed the main groupings found with the Bayesian analysis once Type AB was removed. In fact, when two populations were assumed, tales clearly clustered in BI group and B, AB, A and C group. After that at K=3, it was possible to detect how stories of AB resulted admix as they

appear to have membership in both cluster A and B confirming that they were really the source of conflicting signal (hybrid type) in the dataset. Interestingly, at K=3, STRUCTURE was able to identify population structure for tale-type B, which then slowly show an increase of admixed individuals at K=4 and 5. Overall, this study indicates how model-based clustering methods are powerful tools to identify populations (i.e., tale-types) with a distinct set of frequencies, in this case motifs frequencies.

In conclusion, the application of phylogenetic analysis may not always be sufficient to obtain a clear picture of the evolution of cultural entities such as stories, especially in the case of reticulation phenomena. However, the use of alternative methodologies, such as model-based clustering methods, can help the scholar to better test hypothesis of hybridization.

CHAPTER 4
Modelling Cultural Reticulation Using Networks

As mentioned previously in Chapter 1, one of the main challenges faced by folklorists concerned the classification of folktales. This problem had been strictly linked to the difficulty of defining what a tale-type actually is. Thompson himself provided two definition of tale-type: in the first, he stated that a tale-type is a "traditional tale having an independent existence" (Thompson, 1951:418), while in the second, he defined a tale-type as a tale with a series of motifs combined in a precise combination and in a fixed order (Thompson, 1951). In other words, a tale-type was considered as a defined storyline with an independent series of motifs, different from any other in its meaning, like Cinderella and Snow White. However, as Anna Birgitta Rooth pointed out in the 'Digression' section of her "The Cinderella Cycle", motifs are not independent from one another as they appeared frequently associated in what she defined as "motif-complex" (Dundes, 1962). In the same way, the very definition of tale-type as independent unit is challenged by the blending between different tale-types. Clear examples are found among Cinderella tale-types, where sequences of other tale-types are inserted as introduction or in the middle of the story, as for stories of Type AB which sometimes present motifs borrowed from Type Aa480 ('The Tale of the Kind and Unkind Girls') in the middle of the plot.

The overlapping between different tale-types into one tale-type has therefore been widely observed by folklorists. In fact, as mentioned in Chapter 3, the matter of origin of Type AB had been under severe study by Rooth (1951) who suggested that its formation could have been due to the merge of other two other tale-types: the first act of Type A and the second act of Type B. However, this theory was dropped in favour of an older origin of Type AB and the discussion of the overlap of tale-types did not see any further development. As such, despite posing many problems for the classification of tales, no theories have been suggested to explain how and why this process takes place.

In this regard, in Chapter 3, by exploring the relation among the different tale-types, the findings of phylogenetic inference did show the presence of conflicting signals resulting from horizontal transmission between the different types of Cinderella. This result was later confirmed by implementing a model-based method (i.e., STRUCTURE) able to model admixture that confirmed how a consistent group of stories, precisely tales of Type AB, are formed by plot sequences borrowed from other Cinderella types (i.e., Type A and B) and also by other tale-types that are not classified as Cinderella types (i.e., Aa480). As such, these results raised important questions regarding the creation of stories by storytellers as they suggested the possibility to further investigate which kind of mechanisms underlie the

process of creating a hybrid type. Also, they indicated that although phylogenetic analysis did show some interesting results, its use is still problematic in the case of high level of horizontal transmission. As such, there is still the need to understand how to model and analyse reticulation.

One of the chief questions in cultural reticulation is to what extent cultural traits bundle together or to what extent they are transmitted as separated units (e.g., memes) (Boyd et al., 1997). In this regard, there are two interesting models of reticulations that have been proposed by Boyd et al. (1997). The first sees cultural units as small coherent units bundled together in packages which have their own coherent phylogenetic history but with no single history to describe them all. The second model sees culture units as ephemeral units with no coherence as they tend to evolve quickly and recombine freely. As such, under the first model cultural units are borrowed in packages, whereas under the second model the units are borrowed and blended in many different constellations. In order to understand which model can better describe the formation of hybrid stories, I selected stories of Type AB (n=60) which were found to be admixed stories, and I investigated the inter-relations among the motifs that composed them, which were assembled from different types.

To do so, I used methodologies draw from network analysis which have been successfully used to study cultural processes using literal materials. For instance, Yose et al. (2018) applied network methodologies to the analysis of epic narratives to gain insights about the Viking age in Ireland. Yet, recently, network analysis has been used to study the presence of folk-zoological knowledge in folktales (Nakawake & Sato, 2019).

Specifically, the two previous hypotheses of reticulation are here referred as: a) a "pick-and-mix" model and b) a "packages" model. In the first model, motifs are randomly picked by different sources and mixed together in forming new stories. Under the second model, motifs are instead selected in packages from different tale-types, namely fixed sequences of motifs are transferred and combined in a new story. The graph below (figure 4.1), shows how the tale-type AB could have been formed under the two models (pick-and-mix and packages) starting from tale-types A and B. In Type A and B, motifs are represented respectively by triangles and rectangles which, depending on their position in the story -- beginning, middle, or end --, are coloured by different colours. In the pick-and-mix model, the new tale-type is formed by assembling random sequences of motifs of Type A and B. In contrast, in the packages model, Type AB is formed by combining precise sequences of motifs derived from A and B, that is the first part of A and the second part of B.
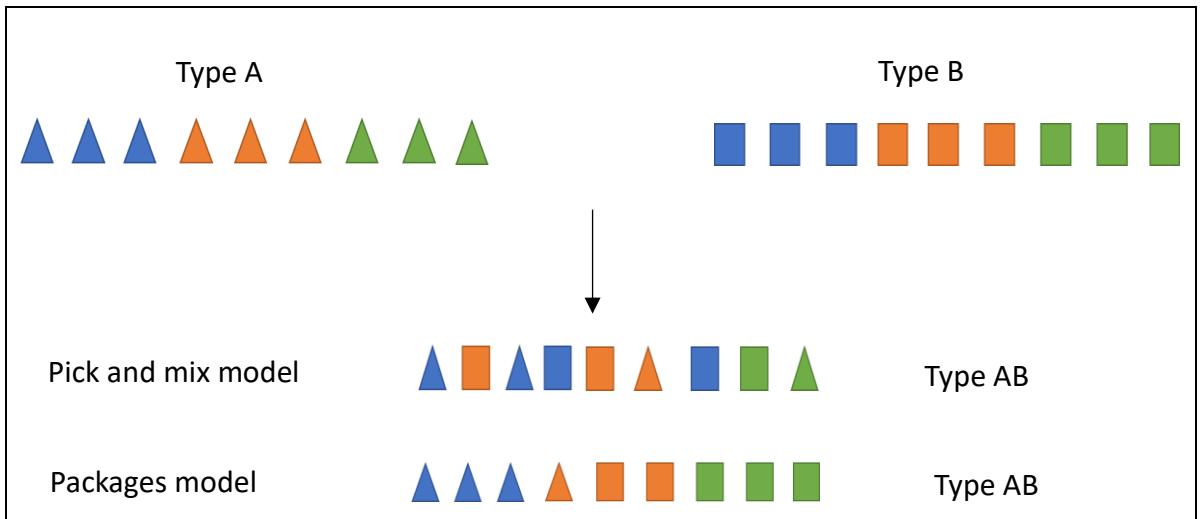
Figure 4.1: Formation of Type AB from Type A and B under the pick-and-mix model and packages model. Motifs of A are represented with triangles while motifs of B with rectangles. Motifs at the beginning of the story are marked in blue, at the middle in orange, at the end in green.

In order to understand which of these models better described the tales' hybridization through the blending of motifs, I focused on an important statistic metric in network analysis called "assortativity" which provides a measure of the degree of homophily of a graph, namely the tendency of nodes (motifs) to connect to others with similar characteristics. In this way, I hoped to be able to assess if the borrowed motifs from the same tale-type tended to cluster together or not.

4.1 Materials & Methods

The dataset for this analysis was drawn from the previous dataset which comprised all the Cinderella types and plot variables which here will be referred with the term 'motifs'. As such, I selected only admixed tales of tale-type AB for a total of 60 stories and 142 motifs out of the 237 previous coded motifs for the phylogenetic analysis (see Chapter 3). This gap in motifs' number is due to two reasons. First, all the motifs that were not present in any of the AB stories were deleted. Second, as I will explain later, only motifemes and allomotifs were considered whereas the attributes were discarded. At this point, a similarity matrix was created following the following steps. At first, I generated a matrix where the rows represented the various motifs and the columns the variables namely the individual tales. Given the use of a conditional-coding system that uses gaps characters, these were converted into 0s. For this reason, I did not choose a similarity measure that took into account shared absences (i.e., absent characters contribute to similarity) as this would have generated biased results; rather I proceeded by calculating a Jaccard index which is a measure that ignores shared absences. To do so, I calculated first a Jaccard distance between each pair of

motifs using the function "dist" in *R* (package stats). After that, I computed the Jaccard index (or Jaccard similarity) which corresponds to 1 minus the Jaccard distance. The Jaccard index is defined as the division between the intersection and the union of the two datasets as described by the formula:

$$J(X,Y) = |X \cap Y| \, / \, |X \cup Y|$$

In this case, the Jaccard Index is an equivalent of a co-occurrence matrix as it provides a measure of co-occurrence between two motifs. In other words, for each pair of motifs, Jaccard Index represents the frequency of tales that include both motifs (intersection) as a proportion of the frequency of tales that include either motif (union).

- **Network analysis**

  To perform the network analysis, I constructed an undirected graph object with weighted edges from the co-occurrence matrix, using the library *igraph* implemented in *R*, which provides a set of network analysis tools that enable to create, manipulate and analyse networks. In this case, the graph obtained showed a number of vertices or nodes that correspond to the different motifs, and a series of edges connecting each node which expressed the degree of co-occurrence between them. Each node was assigned to the tale-type it belonged to, and its membership was specified with a letter and a colour. As I mentioned earlier, in this analysis only motifemes and allomotifs were considered, while the attributes were discarded. Attributes constitute the most variable content in a story, exhibiting a high degree of variations across and even within a single type. Plus, they have a fluid nature meaning that the same attribute might be recorded in different types. Consequently, our aim to assign each attribute to the type it belongs to was impossible.

  Motifs peculiar to Type A and B were coloured respectively in red and blue, motifs of BI (Catskin and Cap o' Rushes) were marked by the letter D and coloured in pink, motifs of Type C (Hero Tales) in green, motifs of Type Aa 480 (The Tale of the Kind and the Unkind Girls) were assigned the letter E and coloured in yellow. As for motifs that were only exhibited by Type AB, were marked by the letter H and coloured in orange. At last, neutral motifs that are motifs common to all the types (i.e., motifemes) were assigned the letter N and coloured in white.

  Upon obtaining the graph, a short explanatory analysis (here not shown) was carried out in order to see if the result obtained with STRUCTURE about AB stories being admixed tales of A and B was reflected by the network analysis. To do so, I employed the community detection algorithms which are a series of algorithms used to detect the eventual presence of

community structure in a given network which is intended as groups of dense connected nodes with few interactions/connections across groups (see Appendix 3). These groups of nodes (aka motifs) were then extracted and qualitatively described and compared to the contents of the real AB tales.

After this, I calculated the graph assortativity. The assortativity of a graph is a measure which indicates if the nodes of a graph preferably connect with other nodes that share similar properties. In this sense, measuring assortativity is a way to establish the homophily (or heterophily) of a graph. Homophily is defined as the tendency of nodes to connect with others which share similar categorical attributions (e.g., gender, race, tale-types, etc…) while the heterophily a tendency of connected nodes to be dissimilar from each other. Newman (2002) was the first to suggest a formula to calculate the global assortativity. This formula was designed for directed and unweighted graph and enabled the user to calculate the graph assortativity based on either the nodes degree or on their categorical attributes. The assortativity value is normalised and ranges between -1 to 1, where 1 indicates a perfect assortativity (i.e., only edges connecting motifs that belong to the same tale-type), 0 a random graph, and -1 a disassortative graph (i.e., edges connecting nodes that belong to different tale-types). In the table below is reported a series of assortativity coefficients for real-world networks (table 4.1). As it is possible to notice, range values of assortativity between 0.1 and 0.2, for mathematics co-authorship and company directors, are already considered strong sign of assortativity mixing in the networks (Newman, 2002). Interestingly, social networks tend to be assortative while biological and technological networks tend to have disassortative values.

Network assortativity	r
Physics co-authorship (Newman 2001)	0.363
Mathematics co-authorship (Grossman and Ion, 1995)	0.120
Company directors (Davis et al. 2001)	0.276
Internet (Chen et al. 2002)	-0.189
World-Wide Web (Barabàsi and Albert, 1999)	-0.065
Protein interactions (Jeong et al. 2001)	-0.156
Neural network (Watts and Strogatz, 1998)	-0.163
Experimental Erdős-Rényi (ER) graph (artificial constructed model) (Bollobàs, 2001)	~0
Experimental Barabási (BA) graph (artificial constructed model) (Barabàsi and Albert, 1999)	~0

Table 4.1: Assortativity coefficients (r) reported for social networks (top three) and biological networks (bottom four) based on nodes' degree. ER and BA are example of analytically generate networks with r=0 (From Newman 2002, page 3).

In this analysis, I chose the nominal assortativity, implemented in the same *igraph* package in *R*, which measures the possibility of a tie between nodes that exhibit the same attribute in relation to the probability expected if the edges were randomly shuffled (Peel et al., 2018). In this case, I defined attributes as categorical attributes namely the tale-types nodes belonged to.

4.2 Results & Discussion: Network and assortativity

The first graph obtained is shown in figure 4.2, where highly connected nodes tend to be placed in the centre of the chart. Despite the high number of edges connecting nodes, it is possible to observe that nodes of A and B, coloured respectively in red and blue, tend to be placed in the middle of the network together with neutral motifs in white (see figure 4.2).
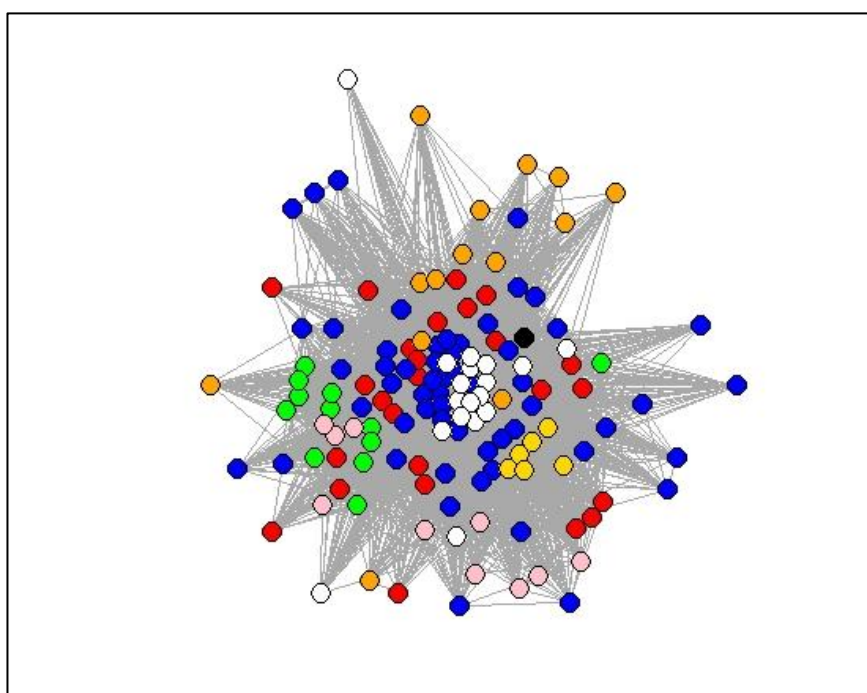
Figure 4.2: Graph showing the connections among motifs of tale-type AB with a Fruchterman-Reingold graph layout. This layout minimises the overlaps of edges with similar length and placed the nodes in the chart in a way in which those that share the highest number of connections are placed closer to each other in the centre of the graph. Motifs of Type A are coloured in red, of B in blue, of C in green, of D in pink, of E in yellow, H in orange, while neutral motifs in white.

To confirm which nodes are highly connected, therefore sharing the higher number of edges, I plotted the graph in relation to the node degree (see figure 4.3). The degree of a node is defined as the number of edges that the node possesses, therefore higher the degree of the node higher will be its size in the graph. The result in figure 4.3, shows that the majority of nodes, aka motifs, of Type B and Type A exhibit the higher connections. The result of the analysis carried out with the community detection algorithm detected five communities of highly connected nodes. After a qualitative comparison between the motifs in the

communities and the motifs of the real AB stories, it was possible to find a correspondence between communities and the real tale groupings of AB (see Appendix 3).
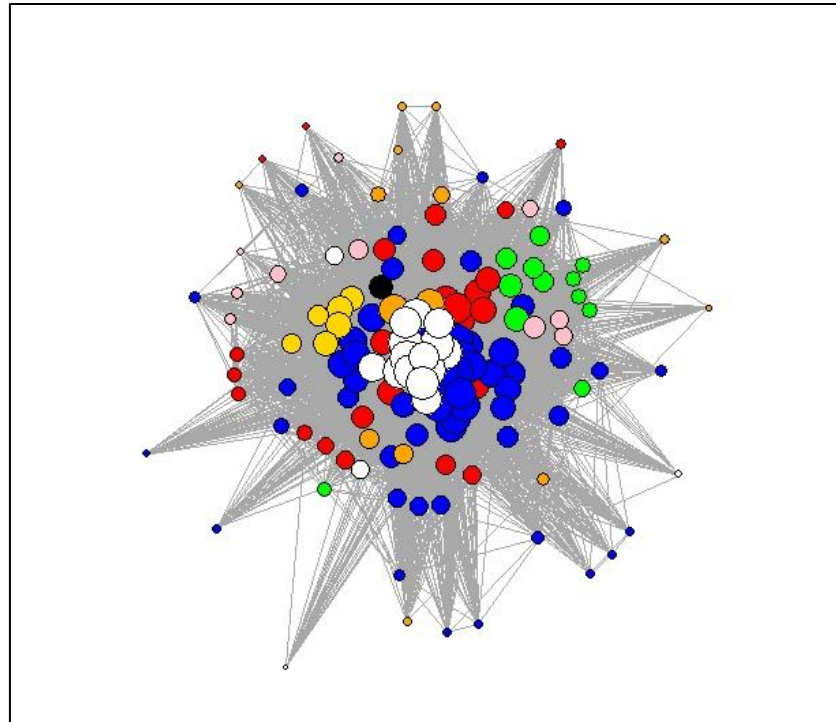
Figure 4.3: Plotted graph based on nodes degree. Motifs of Type A are coloured in red, of B in blue, of C in green, of D in pink, of E in yellow, of H in orange, and of N in white.

As for the assortativity measure, the result obtained using a nominal assortativity formula shows a global assortativity close to zero (r=0.00398) which indicates a random graph, namely a graph where nodes of the same categorical attribute (i.e., types nodes belong to) connect to each other in the same proportion as expected if the edges were rewired randomly (Peel et al., 2018).

However, it has been showed that the formula proposed by Newman for the global assortativity might be imprecise when it comes to weighted networks as it underrates the contribution of heavy-weighted edges among nodes with a similar degree (i.e., number of connections) (Leung & Chau, 2007). In fact, the assortativity measure is independent of the edge weights, meaning that a high weight edge would have the same '*connection value'* as a low weight edge (Noldus & Van Mieghem, 2015). Furthermore, assortativity measure only captures average mixing patterns of the network, therefore its measure becomes meaningful only if the assortativity value of all the nodes are around the mean (Peel et al., 2018). In our case, where weighted edges among nodes (motifs) reflect a measure of co-occurrence between two motifs (i.e., the number of AB tales where they occur together), the fact that this formula does not take into account edge weights might have led to an assortativity value equal zero. Given that the correlation between weighted edges and assortativity is expected to be non-random (i.e., not present in a random graph), if we explore different thresholds

for edges degree, namely if we remove edges below certain threshold values, the network turns to be assortative. This result indicates that the co-incidence of motifs across tales appears to be restricted to motifs of the same tale-type. Specifically, when a threshold for edges degree is set, the assortativity coefficient increases until it reaches a value of 0.19, for a threshold of 0.35, which indicates a strong assortativity as shown in the table below (table 4.2).

Edge's degree Threshold	Assortativity coefficient
0.1	0.041
0.2	0.087
0.25	0.12
0.3-0.35	0.16 -0.19

Table 4.2: Different threshold values for the edges' degree returned different assortativity coefficients. Specifically, when the threshold is set to 0.2, namely all the edges with a weight below 0.2 are removed, the graph turns to be assortative.

Overall, this result seems to confirm what was suggested by Peel et al. (2018), namely that global assortativity might be imprecise in detecting the overall homophily in a graph given the heterogeneity that might be present in large networks. This localised heterogeneity is due to the fact that different subgraphs can co-exist at the same time in a network, and what is happening in a subgraph might not be applicable to the whole graph. In other words, nodes contribution to the overall assortativity might be different, and in this case assortativity occurring only in between nodes connected with high-weighted edges can be called what have been defined as 'local' assortativity. Local assortativity was first suggested by Piraveenan et al. (2008) and states that each node has its own assortativity based on its own properties (e.g., degree). Given the limitation of the global assortativity measure to capture the presence of the local assortativity, I integrated this result by implementing the exponential random graph models (ERGM) which are widely used in social network analysis.

4.3 Methods: ERG models

Exponential random graph models (ERGM) are implemented in the *R* package *ergm*, as part of the *statnet* package (Handcock et al., 2003; Handcock et al., 2008). They are statistical models implemented in social network analysis to model various aspects of networks by accounting for the presence and absence of networks ties (Lusher et al., 2012). As such, ERGM can be considered as tie-based models able to infer how and why ties in networks are formed through specific terms that can be selected by the user (ibid). Specifically, in an ERG model the response variable is represented by the state of a dyad which defines the condition

between two nodes (*i* and *j*), namely, in the case of undirected network, the presence of a tie (note that here the term 'tie' is used as synonymous of 'edge') (Morris et al., 2008). The predictors (or ergm terms) are instead network statistics which are function of the ties themselves (that is why ERGMs can be interpreted as an autoregressive model) and represent a configuration of ties that is expected to happen more or less frequently than the one expected by chance (ibid.) Once an ergm term is specified to fit in an ERG model, it returns a statistic which shows the changed probability to obtain a certain configuration when that term is accounted for.

In this analysis, to assess between the packages model and pick-and-mix model, I tested if the effect of homophily could predict the observed configuration in the network. This is because, in the scenery of the packages model, motifs of the same tale-type tend to be borrowed together. In other words, nodes of that same type would exhibit a preferential behaviour to connect to each other, namely an intra-group homophily. In contrast, in the pick-and-mix model, one would expect not to observe a preferential behaviour among nodes of the same type to cluster together, since under this model motifs are randomly picked and shuffled around in the new story.

To assess the eventual presence of an intra-group homophyly which would indicate towards the packages model versus the pick-and-mix one, I chose a dyad-level predictor called 'nodematch' which takes into account the characteristic of both members of the dyad, for all possible dyads, in calculating the probability of them forming a tie (edge). Also, this predictor is an instance of a dyadic-independent term, where the probability to observe a tie between two nodes does not depend on the presence of a tie among other nodes, but only on the attribute of the two nodes involved (Goodreau et al., 2009). In particular, this predictor considers the nodal attribute 'type' and provides the change in the likelihood of a tie if the two nodes match on that attribute (i.e., the type they belong to). In other words, accounting for the general homophily is a way to understand if nodes that belong to the same type are more likely to form ties with each other than with nodes of any other types (assortative mixing). However, since the previous results of the global assortativity (Newman formulae) indicated the presence of a more complex network scenario in terms of nodes assortativity, I also estimated a differential homophily effect. This model takes into account the possibility that the change in the likelihood of a tie for two nodes being in the same group (i.e., type) can vary by group. This will enable to determine if nodes of a certain type are more or less assortative than others.

4.4 Results and Discussion: ERG models

The null model estimated with the ERGM is an equivalent of a regression model that only include an intercept, in this case a term for tie density, expressed as 'mod = ergm (net ~ edges)'. The ERG model returns an edge estimate in log-odds (=0.48412). The inverse-logit of this coefficient defined as (exp(x)/(1+exp(x)) corresponds exactly to the density of the network (=0.6187), which is the ratio of the number of the edges and the number of possible edges. At this point, I fit in the second erg model a term for the general homophily expressed as 'mod1=ergm (net~edges + nodematch('type'))'. This model is the equivalent of a regression model that includes both an intercept and a predictor variable. As mentioned before, the predictor variable which is the 'tale-type' the nodes belong to, provides a network change statistic in observing that configuration (i.e., the likelihood of obtaining a tie when two nodes match on that specified node attribute). The result is shown in the table below.

Monte Carlo MLE Results:					
Estimate Std. Error MCMC % p-value					
edges	0.40354	0.02311	0	<1e-04	***
nodematch.type	0.37992	0.05134	0	<1e-04	***

Signif. codes: 0 '*' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1**					
Null Deviance: 13878 on 10011 degrees of freedom					
Residual Deviance: 13252 on 10009 degrees of freedom					
AIC: 13256 BIC: 13271 (Smaller is better.)					

Table 4.3: Results of the second ERG model (mod1) which accounts for general homophily of the network based on the nodal attribute 'type' which identify the tale-type each node belongs to. The log-odds of finding an homophilic tie between two nodes of the same type corresponds to exp(0.78)/(1+exp(0.78). The model returns a standard error of the estimates and p-values.

Here, the log-odds of finding a tie which is heterogeneous, meaning that the connected nodes differ in term of type they belong to, is 0.40354 which corresponds to a baseline probability =0.5995385. In contrast, the probability expressed in log-odds of finding an homophilic tie between two nodes of the same type is (0.403)+(0.379) which corresponds to the probability of 0.6864253 [exp(0.78)/1+exp(0.78)]. So, the probability is slighter higher 69% against 60%. Now, to assess the differential homophily, which enabled to detect if certain nodes were more homophilic than others, I built a third model (mod2) where to the predictor (nodematch='type') the argument DIFF=TRUE is added (see table 4.4).

Monte Carlo MLE Results:					
Estimate Std. Error MCMC % p-value					
edges	0.40354	0.02311	0	< 1e-04	***
nodematch.type.A	0.24493	0.12377	0	0.04785	*
nodematch.type.B	0.41608	0.05994	0	< 1e-04	***
nodematch.type.C	0.82023	0.29463	0	0.00538	**
nodematch.type.D	-0.99825	0.31228	0	0.00139	**
nodematch.type.E	13.08079	132.7069	0	0.92148	
nodematch.type.H	-0.87355	0.21671	0	< 1e-04	***
nodematch.type.N	1.54986	0.24623	0	< 1e-04	***
nodematch.type.X	Inf	0	0	< 1e-04	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1					
Null Deviance: 13878 on					
10011 degrees of freedom					
Residual Deviance: 13151 on 10002 degrees of freedom					
AIC: 13169 BIC: 13234 (Smaller is better.)					

Table 4.4: Results of ERG model 'mod2' of the differential homophily of each tale-type, which shows how the probability expressed in log-odds to find a tie between two nodes of the same type varies by type.

The returned logodds are then turned into the corresponding probabilities (see table 4.5).

Type	Probability of a tie	p-value
Heterogenous nodes	0.5995385	< 1e-04
A	0.6566667	0.04785
B	0.6941558	< 1e-04
C	0.7727273	0.00538
D	0.3555556	0.00139
E	0.9999986	0.92148
H	0.3846154	< 1e-04
N	0.875817	< 1e-04

Table 4.5: ERG mod2 which shows the differential homophily namely the probability of forming ties between nodes belonging to the same type by group, in relation to the probability of a tie between two random nodes. In red are highlighted the nodes that are disassortative (D and H) as the probability to find a tie between them is lower than the one expected by chance.

These results clearly show that different nodes contribute to the global assortativity in different ways. In particular, the probability to observe a tie among nodes of types D and H, which correspond respectively to motifs of tale-type BI (*Catskin* and *Cap o' Rushes*) and of tale-type AB, is lower than the one expected between two heterogenous nodes. This indicates that these motifs are disassortative, that is they don't preferentially form connections with other motifs of their same type. It is worth noticing that the model could not return the estimates for the tale-type E (p-value>0.05) which corresponds to tale-type

Aa480 (The Tale of the Kind and the Unkind Girls). This can be due to the lack of information on this tale-type since the number of motifs is quite low (n=6). In contrast, nodes of Type B have 69% of probability to be connected with each other, nodes of Type A, 65%, nodes of Type C, 77%, and neutral motifs which comprehends the majority of motifemes, the higher hierarchical level of a story, 88%.

Upon obtaining these results, I tested the quality of fit of the models by calculating two types of goodness of fit (GOF). The first is expressed by maximum likelihood estimates and express how well the obtained estimates reproduce the ergm-terms in the models. I compared the likelihood of the null model with the likelihood of the model that accounts for general homophily (mod1) and differential homophily (mod2). The Likelihood (log) between the null model and mod1 increases from -6654.187 (df=1) to -6626.09 (df=2) which in turn increases to -6575.512 (df=9) for mod2. However, the increase of the likelihood in the models can be a direct consequence of the increase in the number of parameters, a problem known as 'overfitting'. For this reason, I used two information-based criteria, the Akaike Information Criteria (AIC) (Akaike, 1974) and the Bayesian Information Criterion (BIC) (Schwarz, 1978) for model selection which is the process to judge the model fit. In other words, when comparing two models for model fit, AIC and BIC add a penalty term for the number of parameters present in the model, with the latter penalizing the model more heavily in terms of the number of parameters than the former (Field et al., 2012). Since AIC tend to overfit and BIC to underfit, it's advisable to perform them both. The preferred model is the one with lower AIC and BIC. When using the null model's BIC of 13318 (AIC of 13310) as benchmark, there is an improvement in model fit as mod1's BIC equals 13271 (AIC of 13256). The same is seen when comparing mod1 and mod2, where in the latter BIC improves to 13234, and AIC to 13169. This suggests that despite the addition of parameters in mod1 and mod2, the likelihood increased beyond both AIC and BIC's penalties against additional parameters.

The second test of goodness of fit performed was a likelihood ratio test between the null model and the mod1, and between mod1 and mod2. The distributed chi-squared value (56.199) with one degree of freedom, has a correspondent p-value of 6.55E-14 which indicates that mod1 is significantly better than the null model; in the same way, mod2 is more accurate than mod1 (see table 4.6 and 4.7).

In the case of mod2, given the multiples hypotheses tested for differential homophily, I accounted for the familywise error rates (FWER) which is the probability to reject a null hypothesis which is true (i.e., Type I error). To control for FWER I chose a Holm-Bonferroni method which is a modification of the Bonferroni test and *uniformly more powerful*. The Holm-Bonferroni as a step-down method, starts by sorting out the p-values of each hypothesis from the smallest to the largest and assign them a rank. The smallest p-value will

have rank 1, whereas the largest will have a rank which corresponds to the number of hypothesis, in this case 8. Then it sets a new level of significance which is equal to (α /m - rank + 1) and test each individual hypothesis at this threshold, where α is the desired overall alpha level and m is the number of hypotheses. In this case, the number of hypothesis is m = 8 with a α = 0.05. For the first rank (i.e., smallest p-value), the Holm-Bonferroni correction would be equal to α = 0.05 / 8 − 1 + 1 = 0.00625. For the second rank α = 0.05 / 8 − 2 + 1 = 0.007, and so on (see table 4.8). When the original hypotheses' p-values are tested against the new generated pi, it is still possible to reject the null hypothesis, apart in the case of motifs of type E (i.e., Aa480) which were originally not significant (see table 4.8).

Likelihood ratio test

Null Model: net ~ edges

Mod1: net ~ edges + nodematch("type")

#Df	LogLik	Df	Chisq	Pr(>Chisq)
1 1	-6654.2			
2 1	-6626.1	1	56.199	6.55E-14***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 4.6: Results of the Likelihood ratio test computed between the null model (mod) and the mod1 that accounts for general assortativity.

Likelihood ratio test

Mod1: net ~ edges + nodematch("type")

Mod2: net ~ edges + nodematch("type", diff = T)

#Df	LogLik	Df	Chisq	Pr(>Chisq)	
1	2	-6626.1			
2	9	-6575.5	7	101.15	< 2.2e-16	***

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Table 4.7: Results of the Likelihood ratio test between mod1 (general assortativity) and mod2 (differential assortativity).

Node Type	B	H	N	X	D	C	A	E
p-value	< 1e-04	< 1e-04	< 1e-04	< 1e-04	0.00139	0.00538	0.04785	0.92148
pi	0.00625	0.007	0.008	0.01	0.0125	0.016	0.025	0.05

Table 4.8: Holm-Bonferroni corrections for multiple hypothesis of mod2. Null hypothesis is rejected in all cases apart from tale-type E (in red).

After this, due to the fact that ERG models are generative models, it was necessary to test if our models fit the data well. Since the ERGM account for all the processes that are responsible for the local formation of ties, which in turn are used to describe the global aspect of the network itself, I needed to make sure that all our (local) models could represent the observed global properties of the network that were not included in the models. To do so, I calculated the GOF or goodness of fit for both our models (mod1 and mod2) by choosing a statistic that was not included in any of them. I then compared the value of this statistic observed in the network to the distribution of values returned by a simulated network from our model, using the *gof* function. The *gof* function includes four ergm-terms which describe a network aggregation: the degree distribution (node level), the edgewise shared partners (edge level), the geodesic distances (dyad level). The *gof* command also adds a term for the terms of the original model considered (mod1 and mod2), which gives '*an overall validity check and a reminder of the statistical variation in the estimates of the mean value parameters'*.

I used MCMC methods to simulate a new set of 100 networks (default) to which compared the observed one; the MCMC burnin was set to 100,000 while the MCMC interval 1e+4. By observing the p-values of the GOF results, is it possible to say that both mod1 and mod2 are able to capture the geodesic distance distribution of the network (table 4.9, 4.10, 4.11, 4.12). However, they poorly capture the degree and the edgewise shared partners, and this can be due to the fact that they are quite simplistic models with only one ergm-term (nodematch) that does not take into account nodes degree.

Goodness-of-fit for minimum geodesic distance

	obs	min	mean	max	MC	p-value
edges	6194	6078	6190.73	6314		0.94
nodematch.type	3817	3697	3820.27	3933		0.94

Table 4.9: Goodness of fit for the geodesic distance of mod1. P-values >0.05 indicate that this model can well capture this network statistic.

Goodness-of-fit for model statistics

	obs	min	mean	max	MC	p-value
edges	6194	6078	6190.73	6314		0.94
nodematch.type	1517	1466	1512.77	1557		0.96

Table 4.10: Goodness of fit of the estimates of the original mod1.

Goodness-of-fit for minimum geodesic distance

	obs	min	mean	max	MC	p-value
edges	6194	6051	6192.22	6299		0.94
nodematch.type	3817	3712	3818.78	3960		0.94

Table 4.11: Goodness of fit for the geodesic distance of mod 2. P-values > 0.05 indicate that this model can well capture the geodesic distance.

Goodness-of-fit for model statistics

	obs	min	mean	max	MC p-value
edges	6194	6051	6192.22	6299	0.94
nodematch.type.A	197	180	195.82	219	0.98
nodematch.type.B	1069	1016	1069.09	1124	0.94
nodematch.type.C	51	42	50.41	61	1
nodematch.type.D	16	10	15.72	24	0.92
nodematch.type.E	15	15	15	15	1
nodematch.type.H	35	26	35.33	48	1
nodematch.type.N	134	125	133.7	144	1

Table 4.12: Goodness of fit of the estimates of the original mod2.

In conclusion, the results obtained with ERG models indicate the presence of an ingroup homophily, that is among the nodes which belong to the same type, suggesting that the borrowing of motifs can be described by adopting the packages model, under which fixed sequences of motifs are borrowed together and transferred in a new story.

4.5 General Discussion

Cultural reticulation in stories can be described as the overlapping between motifs of different tale-types into a new tale-type, a phenomenon that has been observed by folklorists but failed to be explained. In particular, it is still unknow whether this process is governed by specific rules or not. Cultural evolution theories about reticulation processes (Boyd et al., 1997) offers two models that can potentially describe the process of formation of stories, that is if stories features are selected individually and merged randomly with one another (pick and mix model), or if they are selected in packages and transferred together in a new story (packages model). To test these two models, I employed methods of network analysis to analyse a corpus of admixed stories of tale-type AB. First, a short analysis was carried out to confirm the result obtained by STRUCTURE, that is if these stories are formed mostly by a combination of motifs of Type A and B. This was done by using a community detection analysis which allow the user to detect sub-communities of nodes which present

connections that are stronger than with nodes of other communities. The analysis was able to identified five different communities of highly interconnected nodes aka motifs, which qualitatively correspond to the motifs of tales of AB.

After this, I used a network measure called assortativity, which turns to be useful in understanding the behaviour of the nodes (motifs) of the network. In particular, it provides a measure of homophily that is if nodes of the same kind tend to cluster together (homophilic graph) or not (heterophily). In this case, the assortativity of the graph was calculated based on the categorical attributes of the nodes which allowed to identify if nodes that belonged to the same type tended to cluster together or not. The assortativity value obtained for the network was close to zero, indicating a non-preferential behaviour of nodes to cluster together. However, when imposing different thresholds on the edges' degree (>0.2), the assortativity coefficient increased, indicating a more complex scenario underneath, most likely due to the heterogeneity in the network structure.

For this reason, I implemented the ERG models to further investigate the homophily of the network. The result of the general homophily showed that the majority of nodes with similar attributes (e.g., type they belong to) tended to connect to each other, confirming the packages model hypothesis. However, the differential homophily highlighted a more heterogenous scenario with some nodes, respectively belonging to Type BI and AB (D and H), being disassortative that is not forming connections with others of the same group. This would explain why when calculating a global assortativity, the result obtained was equal zero. However, the fact that nodes of Type A and B did show an assortative mixing confirmed that Type AB was constructed by putting together packages of different motifs together. Nodes of Type C also appeared to cluster together and this is supported by the fact that in Scandinavia area one can find instances where stories of Type AB have been contaminated by Type C which is widely spread in northern Europe (Rooth, 1951). As for motifs borrowed from Type BI (n=10) being disassortative that can be due to a random selection of these motifs during time. In fact, there are no indication in the literature that Type AB was highly contaminated by this type which, as mentioned beforehand, appear to be a quite separate tale-type as a non-stepmother story. Interestingly though, motifs peculiar of Type AB also showed a disassortative behaviour which might indicate that this type was not constructed by assembling together motifs anew, rather it was formed by assembling pre-existing patterns of motifs borrowed by other tale-types (A+B). At last, neutral motifs (N) which mainly correspond to motifemes were found to be assortative. As explained in Chapter 2, motifemes are defined as the building blocks of a story. The fact that they appeared to be assortative confirms what was said in Chapter 2, namely that stories possess a hierarchical schema which is maintained when stories are transmitted and reinforced by the fact that humans tend to retain and associate the elements at the higher level together.

These findings offer important insights on how stories have been assembled in the past and most likely how they keep being formed nowadays. The analysis of tale-type AB showed how these stories have been formed by borrowing different packages from other tale-types like A (C in Scandinavia) and stories defined as B. Importantly, I showed how these motifs were not individually picked and mixed together, rather they were extracted in packages and surgically attached in different combinations. This phenomenon sheds light on our understanding of how cultural units are being transmitted, suggesting that in case of oral narratives their transmission most resemble the cultural model of packages. Lastly, the use of network analysis tools can be useful to shed light on the processes involved in the evolution of other cultural domains such as material culture and social norms.

CONCLUSIONS

This study has focused on bringing new insights into the evolution of folktales. In particular, I tried to shed light on the evolution and origin of Cinderella, one of the most culturally widespread folktales in the world. By using tools offered by the cultural evolutionary theories, this study has tried to address three main research questions:

1) **Which is the best way to code oral narratives? Is it possible to identify a set of coding rules that is principled and consistent?**
2) **What is the evolutionary history and origin of the folktale of Cinderella? How the different tale-types of Cinderella are in relation to one other?**
3) **How have stories been assembled in the past by storytellers? Specifically, which is the mechanism underlying the creation process of new stories?**

This chapter reconsiders these thesis questions - which were treated respectively in Chapter 2, 3, and 4 - in the light of the main findings that have been obtained. It also provides directions for future studies and summarises the main contributions for the field.

One of the main achievements of traditional approaches of folklore studies (e.g., historical geographic method), is the provision of an indispensable tool for any scholar who adventures in the cross-cultural analysis of folktales, the so-called ATU index. The ATU index is an encyclopaedia of tales grouped in more than two-thousands tale-types across three-hundred cultures worldwide (Uther, 2004), which literary scholars used to try to reconstruct the original archetype for any given tale tradition. However, in their attempt, they suffered many critics mostly due to methodological limitations of their approach. One of those limitation starts with the lack of a clear definition of the characters to analyse when classifying and studying oral narratives. The three categories of characters or 'motifs' suggested by Thompson (1951) (i.e., actors, items, and incidents) were defined as independent units, in reality they appeared to have a fluid nature being borrowed and blended as pleased. Also, they overlapped with each other as not mutually exclusive (i.e., one cannot find an 'incident' without an 'actor' or an 'item' in it) (Dundes, 1962). The second main problem raised as a direct consequence of this latter one, and concerned the categories in which tales are grouped, the so-called 'tale-types'. The definition of tale-type as an independent storyline with a fix number of motifs combined in a fixed order (Thompson, 1951) is challenged by the fact that motifs tend to get associated to one another quite freely (Rooth, 1951) and by the overlaps of tale-types (Dundes, 1997). As such, tale-types were criticised to be just analytical and artificial constructs and not real groupings of tales sharing a common ancestor (Jason,

1970). In this regard, quantitative methods have recently been applied to tackle the limitation of the qualitative approaches (e.g., Tehrani, 2013; Ross et al., 2013). The use of the phylogenetic analysis offered new advantages in the analysis of the evolutionary history of tales, especially for its ability to take into account any features that scholars aim to code, and not only few privileged motifs, and not to make any priori assumptions about the ancestry of a particular trait (Tehrani, 2013).

As such, I employed the same methods to analyse the data corpus of Cinderella and shed light on its origin and evolution. However, a clear coding system for narratives with a set of principled rules was still lacking. As such, the first research question was aimed to address this issue which was treated in Chapter 2. By drawing insights from structural analysis theories (Propp, 1968), I suggested to replace the blurred concept of 'motif', suggested by Thompson, with a new unit of analysis called 'motifeme' (sensu Dundes, 1962). The advantage of using motifemes is that their analysis allows the scholar to identify the main building blocks of a story and the subclasses of characters that are used to describe them (i.e., allomotifs and attributes). The use of motifeme as unit of analysis help the scholar to take into account only structural features, believed to be constant in contrast to content features (e.g., Propp, 1968; Dundes, 1962). In this way, plot features are coded along three units of analysis, - motifemes, allomotifs, and attributes, - which are in a partonomic relations to each other, similarly to what suggested by cognitive psychologists about the structure of folk stories (Mesoudi & Whiten, 2004).

Given this partonomic hierarchy among the different units, in which attributes are used to describe allomotifs which in turn are part of motifemes, the absence of one influence the presence/absence of the other. In order to understand how to code these features for the phylogenetic analysis, I took into account the dependencies among those characters by testing two coding systems (a conditional-absence and a non-conditional absence coding). By implementing both cultural transmission methods (i.e., branching transmission chain) and phylogenetic methods, I showed how the best way to code stories was the use of a conditional-absence coding which uses gaps characters.

Although this study did not feature all the existing mechanisms in act during the transmission of stories (i.e., multiple sources and multiple hearing times) it still contained an important resemblance of vertical transmission through oral means. Most importantly, it provided a set of coding rules that allow the scholar to extract plot features in an objective way, and that can be applied not only to Cinderella but to the analysis of other oral narratives. Also, the use of nested structural units which replaced the coding of motifs, helps avoiding to group tales based on similarities due to convergence of characters. Also, it provided guidance on how treating dependencies among characters for the phylogenetic analysis.

This coding system was then applied to shed light on the evolution and mutual relationships among the different types of Cinderella. In fact, Cinderella's tales have been categorised by folklorists in different tale-types. Cox (1893) recognised four main groupings (Cinderella, Catskin, Cap o' Rushes, Hero tales, and Indeterminate tales) which correspond to the types in the Aarne-Thompson-Uther index (ATU) (i.e., 510A, 510B, 510B, 511B, 511). However, Rooth (1951) claimed that it was justifiable to talk about a 'Cinderella cycle' comprising five main types (B, AB, BI, B, C, and A). She also suggested different theories about the formation of these types and their mutual relationships. Some of these theories, included Type AB being either the older form of Cinderella or a conglomerate type between A (511) and B (510A). As for Type B (510A) it was considered as a reduction form of Type AB in Europe, while Type C (511B) was said to be the male version of Type A (511) (Rooth, 1951). Yet, both Rooth and ATU index treated Type BI as a unique type (510B), formed by stories of Catskin and Cap o' Rushes (sensu Cox, 1893).

These theories were tested in Chapter 3 with the aid of quantitative methods. However, the use of phylogenetic inference (i.e., NeighborNet and Bayesian analysis) could not fully capture their evolutionary history due to a high degree of conflicting signals among the lineages. As such, since tales of tale-type AB were hypothesised to be hybrids tales (Rooth, 1951), they were removed from the dataset. At this point, the Bayesian analysis returned the following results:

- Type BI is formed by two monophyletic clades (Catskin and Cap o' Rushes) sharing a common ancestor, therefore this type can be considered as a big grouping of these two traditions, as suggested by both Thompson and Rooth (1951).

- Type A and Type C share a common ancestor as argued by Rooth (1951).

- Stories of Type B do not form a phylogenetic grouping (i.e., they do not share a common ancestor), as such they cannot be a result of the contraction of tale-type AB.

These new findings partly confirmed what suggested by folklorists about the nature of Type BI and the relation between Type A and C which evolution can be described as a product of descend with modification. However, they also indicated how cross-cultural pattern in folktales due to common descent, can be obscured by the presence of reticulation processes as indicated by the existence of conflicting signals from Type AB. As such, these processes play an important role in stories evolution and the need to model them becomes crucial. In this respect, even though powerful tools, phylogenetic methods still present methodological limitations especially in case of reticulation. Previous way of dealing with blending included the use of distance-based methods like the one used here (i.e., NeighborNet). However,

these methods lack of statistical rigor as they too much rely on the graphical representation and distance measure used, and their result is difficult to interpret (Pritchard et al., 2000). That is why, I suggested to borrow methodologies from population genetics, like model-based methods which are often employed in dealing with admixed populations of hybrid species. One of the most widely used is implemented in STRUCTURE 2.3.4. The advantage of STRUCTURE compared to previous methods, is that it allows the scholar to cluster individuals (i.e., tales) in subpopulations (i.e., tale-types) based on their motifs-frequencies. More importantly, it is able to infer those populations, in other words to assess population structure, even when individuals are inbreeded due to contaminations among the lineages. Thanks to the use of STRUCTURE, I could confirm what was found by the phylogenetic inference once AB was removed (i.e., about Type BI and the relation of A and C) and more importantly I could yield these new insights:

- AB stories are admixed stories, with motifs borrowed from both Type B and Type A+C.

- Stories of Type B, even though they appeared not to share an exclusive common ancestor, form a population with different motifs frequencies from other tale-types.

In conclusion, the study carried out in Chapter 3 was able to shed more light on the evolution of Cinderella confirming some of the hypotheses formulated by folklorists while revisiting others. Specifically, it showed how Type B is not a real grouping but rather motifs of this 'tradition' have been borrowed during time in forming Type AB. Consequently, this latter type is not what was believed being the older form of Cinderella originated in Asia from Type A, rather an instance of hybrid tradition. Furthermore, this study also showed the limitations of phylogenetic methods in dealing with reticulation processes and the possibility to fill this methodological gap by using a pluralistic approach that involves the use of alternative methods (i.e., model-based methods) which can help to reconstruct cultural phylogenesis even in case of reticulation which appeared to play an important role in the creation of hybrids stories (i.e., AB).

The phenomenon of cultural reticulation is an important issue in culture evolution which in the case of folktales can be described by the overlapping between different tale-types (i.e., Type A and B in Type AB). This phenomenon has been described in the folklore literature but not fully understood. As such, in Chapter 4, I investigated how the different motifs, seen here as cultural units, have been assembled in forming hybrid stories with the aim to shed light on the processes that shape cultural inheritance. In particular, two hypotheses were tested. One that sees cultural units as coherent units transmitted in packages and the other which sees them as ephemeral units (Boyd et al., 1997). To do so, I used methodologies borrowed by

network analysis, which allow to investigate the forces that shape the inter-relations among the motifs in order to assess which of the two models better describe the borrowing of motifs. In particular, I tested if borrowed motifs from the same type were more likely to be associated to one another. The reason is because if a packages model is assumed, then one can expect motifs to be associated with one another; in contrast, if motifs are freely picked and recombined in a new pool of stories, they would not show any preferential behaviour to cluster together. By using different statistics available in network analysis (i.e., assortativity and ERG models) I tested the degree of homophily of the network which shows if motifs tend to cluster with those who share similar characteristics. The result showed the presence of a general homophily in the network confirming the packages hypothesis while the differential homophily showed how some motifs were more homophylic than others. Specifically, I found that:

- Motifs of Type A, B, C and motifs common to all the types (i.e., motifemes) showed an assortative behaviour confirming that AB stories were formed by borrowing packages of A and B which were then combined together.

- Motifs of tale-type BI (Catskin and Cap o' Rushes) and motifs of AB were instead heterophilic. This is because AB stories are commonly not formed by borrowing motifs of BI, meaning that these two tale-types rarely overlapped with each other during time. As for motifs peculiar to AB, they being disassortative can be due to the fact that AB stories have been formed mainly by combining motifs or A and B together, as showed by STRUCTURE.

Although previous studies dealing with the evolution of cultural phenomena have seen reticulation as "noise", these findings interestingly showed how reticulation is actually an interesting phenomenon and fundamental in shaping the evolution of folktales. As such, it is of great importance to find out and use methodologies able to characterise and describe it. Methods that have been suggested in this study, like STRUCTURE and network analysis, can be used in the future by scholars to gain insights and model cultural reticulation.

Overall, this study is a significant step forward into the study of oral narratives, as it provided a coding system applicable to any folktale and showed how it is possible to infer the evolution of a given oral tradition even in the presence of horizontal transmission. In the case of Cinderella, this has resulted in our understanding of how this 'Cycle' is actually formed by different traditions, some of which have evolved by descend with modification (Type BI and A and C). In contrast with what was suggested by folklorists, this study showed how Type AB is not a real phylogenetic grouping, rather a consistent group of tales formed through blending processes in which packages of cultural units (i.e., motifs) were selected and borrowed.

Needleless to say, there are many other aspects of the evolution of narratives that can be taken into account. For instance, in the light of these findings, it would be interesting to analyse the processes affecting folktales transmission, which hypotheses so far appeared to be too theoretical without providing information about frequency and circumstances in which these processes occur. For instance, it would be interesting to investigate if different levels of a story plot in terms of motifemes, allomotifs, and attributes appear to be more stable than others during the transmission process of stories. This can furnish interesting insights on how information is stored and recall by human minds. However, the implication of this research can be extended beyond the study of Cinderella and oral narratives.

In fact, starting from the coding system suggested in Chapter 2 to code oral narratives, which takes into account the dependencies among characters, this can be potentially applied to the analysis of other cultural realms that exhibit a hierarchical structure. Similarly to what suggested by cognitive psychologist for behavioural knowledge, Mesoudi and O' Brien (2008) argued that the knowledge of tools making can be explained in terms of a hierarchical structured 'recipe'. In fact, there are different interdependent steps involved in tools making (i.e., preparation of the materials, the making of the artefact, and the use of it) with each of them in turn comprising other sub-actions needed to accomplish the action itself. Consequently, the use of a conditional absence coding system can help investigating the evolutionary history of such cultural traits which comprises stone tools, decorative patterns, rules of sports/games, food preparation, etc…

Secondly, when it comes to cultural reticulation and the different methodologies employed in modelling it (i.e., model-based method, network analysis), these can also be used to test reticulation hypotheses (pick-and-mix versus packages model) in other cultural domains where the transmission of cultural traits can be also affected by this phenomenon. For instance, Matthews et al. (2011) tested two models of evolution for Iranian tribal textiles traditions (hierarchical model vs packages model). The first sees cultural traits as having a core tradition whose evolution happens through descend with modification (i.e., phylogenesis) and peripheral elements which are subjected to rapid changes and diffusion (Boyd et al., 1997). The second one, packages model, is the same one suggested here for stories, where cultural assemblages are instead formed by different packages which are borrowed together and therefore present different descent histories from each other. They found that this latter one better described the transmission of textile designs which comprises two phylogenetically distinct packages.

The impact of reticulation phenomena has also been investigated in the evolution of languages. For instance, Willems et al. (2016) investigated the evolution of Indo-European languages in terms of the formation of hybrid languages from unrelated parent languages due to lexical borrowings. They used different methodologies, including hybridization

networks, and successfully identified the donors and recipient of word borrowing. In this sense, the methodologies suggested in this present study can shed light on how lexical but also phonological and syntactical material is being borrowed, in other words, which reticulation model better describe the transmission of a sets of traits (e.g., words) among languages. Similar reticulation phenomena also affect the evolution of texts, especially in the case of manuscripts. In this respect, Phillips-Rodriguez et al. (2007) used computational tools to map horizontal events which led to the contamination of a manuscript of the Mahābhārata tradition. Contaminations in manuscripts transmission can be due to a scribe copying a text using two different sources at the same time, or by using a source and then switch to another one at a later stage. In this particular study, Phillips-Rodriguez et al. (2007) employed the maximum chi-squared method which was developed in biology to detect and map contamination and recombination events in genetic sequences (Maynard Smith, 1992). In short, the program selects pair of manuscripts and creates a sequence where the difference between the two texts are indicated. An imaginary breakpoint is then moved along this sequence in order to compare *'the observed number of differences before and after this breakpoint with the expected number of differences in the absence of any exemplar change or recombination'* (Phillips-Rodriguez et al., 2007:3). The program then calculates a chi-squared value for each breakpoint and plots the obtained chi-squared values against the location of the breakpoint (ibid.). A chart is then originated where high peaks correspond to high values of the chi-squared. These peaks indicate the location where the biggest difference between the texts is registered and therefore where the change in the manuscript is likely to have occurred (Windram et al., 2005). By using this method, they found that at least one scribe used more than one version during the manuscript copying process of the Mahābhārata tradition, even though they could not assess when it happened. Model-based clustering methods and network analysis can be potential tools to employ to test whether a scribe preferably copied specific sections (packages model) from a source or freely selected different parts when copying and creating a new version of the manuscript.

In conclusion, this study has helped advance the evolutionary analysis of oral narratives (i.e., folktales) by going beyond the use of phylogenetic trees. In fact, I showed that the use of interdisciplinary tools, such as population genetic and network analysis methods, can help scholars to shed light on more complex traditions that have evolved through borrowing and blending. Given that reticulation is an important process in cultural evolution more generally, I suggest that this study can provide a potential model for future research in other areas, such as linguistics, archaeology, and social norms.

List of variants recalled orally by participants and here reported in written form.

RHODOPIS ORIGINAL TALE

Long ago in the Ancient land of Egypt, lived a young maiden named, Rhodopis. She was born in Greece, but was kidnapped by pirates and carried down into Egypt where she was sold into slavery.

Her owner turned out to be a kind old man, who spent most of his time under a tree, sleeping. Because of this, he never saw how the other girls in the house, all servant girls, laughing and teased her because she looked differently from them. Their hair was straight and black, while Rhodopis ones was golden and curly. They had brown eyes and she had green. Their skin had the glow of Copper, but she had pale skin that burned easily in the sun, causing them to call her Rosy Rhodopis. They also made her work hard, shouting at her all day, and saying: "Go to the river and wash the clothes," "Mend my robe," "Chase the geese from the garden: "Bake the bread."

Now she had no friends, only the animals. She had trained the birds to eat from her hand, a monkey to sit on her shoulder, and the old hippopotamus would slide up on the bank, out of the mud, to be closer to her. At the end of the day, if she wasn't too tired, she would go down to the river to be with her animal friends, and if she had any energy left, from the hard day's work, she would dance and sing for them.

One evening, as she was dancing, twirling around lighter than air, with her feet barely touching the ground, the old man woke from his sleep, and watched as she danced. He admired her dancing, and felt that one so talented should not be without shoes. He ordered her a special pair of slippers. The shoes were gilded with rose-red gold, and the soles were leather. Now, the servant girls really disliked Rhodopis, for they were jealous of her beautiful slippers.

Word arrived that the Pharaoh was holding court in Memphis, and all in the kingdom were invited. Oh, how she wanted to go with the servant girls. For she knew there would be dancing, singing, and lots of wonderful food. As the servant girls prepared to leave in their finest clothes, they turned to her and gave her more work to do before they returned. They poled their raft away, leaving the sad girl on the bank. As she began to wash the clothes in the river, she sang a sad little song. The hippopotamus, tired of this little song, splashed back into the river. The splashing of the water wet her slippers. She quickly grabbed them up, wiped it off, and placed them in the sun to dry. As she was continuing with her work, the sky darkened, and, as she looked up, she saw a falcon sweep down, snatch one of her slippers, and fly away. Rhodopis was in shock for she knew it was Horus, who had taken her shoe. Rhodopis now, with only one slipper, put it away in her tunic.

Now the Pharaoh, Ahmose 1, Pharaoh of upper and lower Egypt, was sitting on his throne looking out over the people, and feeling very bored. He much preferred to be riding across the desert in his chariot. Suddenly, the falcon swooped down and dropped the rose-red golden slipper on him. Surprised, but knowing this was a sign from Horus, he sent out an order that all maidens in Egypt must try on the slipper, and the owner of the slipper would be his queen. By the time the servant girls arrived, the celebrations had ended, and the Pharaoh had left by chariot in search of the owner of the golden slipper. After searching on land, and not finding the owner, he called for his barge, and began to travel the Nile, pulling into every landing so maidens could try on the slipper. As the barge rounded the bend in front of the home of Rhodopis, the servant girls ran to the landing to try on the shoe, while she hid in the rushes. When the servant girls saw the shoe, they recognized it as Rhodopis's slipper, but they said nothing, and still tried to force their feet into the slipper. The Pharaoh spied Rhodopis's hiding in the rushes and asked her to try on the slipper. She slid her tiny foot into the slipper and then pulled the other from her tunic. The Pharaoh pronounced that she would be his queen. The servant girls cried

out that she was a slave and not even Egyptian. The Pharaoh responded with: "She is the most Egyptian of all, for her eyes are as green as the Nile, her fair as feathery as papyrus, and her skin the pink of a lotus flower."

RHODOPIS FIRST GENERATION

1a

The story is about a young maiden, named Rhodopis. She's from Greece, but she was kidnapped by pirates, and taken to Egypt and sold into slavery. She was bought by a kind old man, who spent most of his time, sleeping under a tree, all day. But because he spent most of his time sleeping under a tree, He didn't see how horrible the servant girls were to her. They make fun of her because she looked different. Their hair was black and straight, hers was golden and curly. Their eyes were darker, hers were green. Their skin were copper, and her skin was pale and she burned easily, so they called her Rosie Rhodopis. So they gave her a lot of work to do, they would make her mend their robes, and wash clothes, and chase the geese from the garden, and bake bread, and they were very hard on her. So her only friends were the animals, she taught the birds to eat from her hands, there was a monkey who would sit on her shoulder, and there was an old hippopotamus, that would come up on the banks to be near her. So at the end of the day, since she had no friends, if she wasn't exhausted, she would go down to the river and hang out with her animal friends, and sometimes she would dance. And one day, the old man woke up from his nap, and saw her dancing. He saw how beautifully she danced, she was very light on her feet, so like they barely touch the ground, and he thought: She must have shoes. So he ordered a special slippers for her, made out of red rose gold, and they had leather on the bottom. When the servant girls saw her shoes, they hated her more than ever, there were meaner to her.

So one day, it was announced that the pharaoh was going to hold court in Memphis, and everyone was invited. So the servants girls were very excited about going, and they put on their fine clothes. And as they pulled away their boat from the shore, they had given Rhodopis even more work to do, and left her on the back. And so Rhodopis was very sad, and she started singing a sad little song. That irritated the hippopotamus, and so he went back into the water, and when he did it, he splashed water on her slippers. So she was upset that her slippers were wet, so she went and got them and she tries to dry them off, and put them someplace to dry, and went back to her work. But then the skies went dark, and a falcon swooped out of the sky, and grab one of her slippers and went off. She knew this was the Egyptian god Horus. So she took the other slipper and put it in her tunic. She Finished her work and went back.

So the pharaoh was in Memphis holding court, and he was very bored, he'd rather be driving his chariot across the desert. And the falcon dropped the slipper in his lap. So at that time, he decided he knew this was something from Horus. And he decided, at that moment, he would go try to find the maiden, whose foot, would fit into the slipper, and she would be the queen of Egypt. So he left before the servants girls got there, and he went all over the land, and he couldn't find the maiden. So then he decided to take his barge and go down the Nile, and he would stop at every port and try to find the maiden. So as he was coming down the Nile, just before he got to where the servants girls and Rhodopis lived, all servants girls saw him, and they wanted to run out and try to fit into the slipper. So when they saw the slipper, they knew it belong to Rhodopis, but they said nothing. Instead they just tried to force their feet into the slipper, meanwhile Rhodopis were hid in the rushes. But the pharaoh saw her, and he insisted that she come out, and try on the slipper. And of course, her tiny foot slip perfectly into the slipper. And he declared her the queen of Egypt. The servant girls were angry and said she was not even Egyptian. And he said: she's the most Egyptian of all, as her eyes are green as the Nile, her skin is like the lotus flower, her hair is soft and feathery like the papyrus.

1b

This story takes place in Ancient Egypt, and it is about a girl called Rhodopis, who originally was from Greece but pirates stole her, and she was sold into slavery in Egypt. She had actually a very nice owner, who spent most of his days sleep under a tree. So he never noticed that all the other girls, who were into his house, all servants, were really mean to

Rhodopis. They would tell her that her eyes are green, and their eyes are blue, her hair was curly, and that their hair was black and straight, her skin was pale and would burn in the sun, but they have skin like Copper. They were basically just really terrible to her, so her only friends were the animals. The servant girls used to tell her to go down to the river, to wash this for me, clean up, do that. So every day, she would be really exhausted. But in the end of the day, she would go to the river, and she would talk to the animal and, if she had enough energy, she would dance for them and sing them. They became really fond of her. The birds would eat from her hand, and the hippo would come upon the bank to be closed to her. The animal would just be around her.

One day, she went down after a long day of work, she was seen by the old man, who was not sleeping this time, and he saw her dancing, he thought that such a beautiful dancer should not dance without any shoes. He made her some wonderful shoes, made of rose-gold and leather, and he gave them to her, like a gift. All the other servants girls were really jealous of her.

One day, the pharaoh was holding court in Memphis, and he said everybody in the land was invited, but the servants girls did not want Rhodopis to go, even though she wanted to go, because she knew there would be a full of dancing, and she would enjoyed doing that. So they gave her a long list of jobs, that needed to be completed, so they could go away and go to the party, while she had to stay by the river bank and do all the cleaning. They went off the party, and she was by the river bank, sang a sad little song and cleaning all their clothes. The hippo were so annoying of that song, that they splashed back into the river, and a splash came on and wet one of her shoes. So she took them off quickly, because she did not want to damage them, and put them on the side, to dry in the sun. She carried on with her washing, and there was this falcon that flew down and stole one of the shoes. So quickly, she grabbed the other one.

In the meantime, the Pharaoh was at his court, being really bored, because he would rather be riding through the desert, so he wasn't having a great time. And suddenly, this falcon flew in and drop the slipper on his lap. He was a bit surprised, but he knew it was a sign from Horus. So he decided, that because this must be a sign, he must travel the land to find the girl, whose foot fits the slipper. So he travelled through all the land, and by the time the servants girls got to the party, he was not even there. When he was unsuccessful looking through the land, he then called his servants to get his barge, and start to travel in the Nile, pulling in every stop, so then everybody there could try on the shoe. By this time, all the servants girl were all gone back to their home, told Rhodopis what was happening. The barge pulled up, and Rhodopis hid in the rushes, by the side of the river, while all the servants girls where trying to put on the shoe, even though they knew it belong to Rhodopis, and knew it would not fit them. And then, the Pharaoh spies her eyes, and got her to come up and try the shoe, which she put on and fitted. And she put the other one out of her pocket. They got married.

2a

There was a girl called Rhodopis, she was Greek, but she was taken to Egypt, and sold to an old man, as a servant. He was nice to her, and he spent all of his times, under a tree. The servants were mean to her, give her all the hard jobs to do, made her fix her clothes, or wash her clothes. She did not have any friends, except from the animals, that were by the river where she washed the clothes. One night she went down the river, and she danced, and her old master looked out, and saw her. He thought it was pity, that she danced so beautifully, but did not have any shoes. So he got her some dancing slippers, made of rose and gold, and have leather as soles. The servants were even more jealous of her shoes.

One day the Pharaoh held a banquet, where he invites everyone, and the servants were really excited, they dressed up really nice, wearing nice clothes. But, because they did not like the girl, they gave her all kind of jobs to do. And she went down the river, they took out the raft, so she could not leave. And she had to do all her jobs while they went to the feast. While she was there, she was doing her singing and dancing, a hippo got into the water, and made one of her slipper wet, when he splashed. She puts one slipper to dry, and the other one in her robe, and carrying on singing and dancing. Then the sky went dark, and a falcon took her slipper, and left and went to the feast, where he dropped the slipper near the pharaoh.

The pharaoh was really bored at the feast, he would rather be in the battle. So he was intrigued by the slipper, and thought whoever owns it, must be an interesting person, and he declared, that whoever owns the slipper, would be his Queen.

So, he went out to all the servants houses, looking for her, and making them try the slipper, and all the servants tried to hide Rhodopis. The pharaoh, could see her, and made her try the slipper, which fits to her. She took out the other slipper from her robe, and he said she would be the Queen. The servants protested, that she was not even Egyptian. And the Pharaoh said, she was the most Egyptian of all, because her eyes were green as the Nile, her skin was as pale as papyrus, and her lips were as red as the lotus.

2b

There was a girl who is from Greece, and she is kidnapped by pirates and taken to Egypt. She is sold to an old man, he is quite nice, but he sleeps all day. That means that all the other servants he employed got quite jealous of her. She has to do a lot of staff, going down to the river to do the washing, cleaning the clothes. She doesn't like doing it so much. When she is down there, she talks to the animal, she sings for them, dances. The animal like that a lot. The animals came around her, the hippo on the bank. The other servant girls did not like her because they think she is different from them: they have copper colour skin, while she has pale skin that burns easily in sun. They also have different colours of hair from her. She is treated quite badly

Then the pharaoh has a festival in Memphis that involves a lot of dancing. She wants to go but the other girls did not want her to go. They went to the festival, while she has to stay behind the river, doing the cleaning, the washing. While she is doing it she sang a sad song. The old man who owns her gives her some shoes because he likes that she would like to dance. So when one of the shoe got wet she get the other one because she does not want to get punished. When she is taking them off, a falcon came and steals one of them. She has the other one. The falcon flies off with it.

While the other servants are at the party, the falcon drops the slipper and the pharaoh picks it up. He is not having a nice time at the party because he would rather be riding in the desert. He sees the slipper and he thinks he is want to find whoever the slipper belongs to.

He goes out to search for the girl who can fit the shoe. When the other servant realises what is going on came back home, they ask the girl what was going on, so the girl hides. After she hides, the raft pull back with the pharaoh. All the other servants try the slipper on but because it is not their, it does not fit. The pharaoh spots her hiding and ask her to put it on, and of course it fits. Accordingly they get married.

2b1

The story is set into Egypt, and it is about a girl called Rhodopis, who was from Greece, but kidnapped by pirates, and sold into slavery in Egypt. Her owner was a kind, old man, who spent most of his days, sleeping. This girl was not like the other servants girl, who mocked her, about the colour of her skin, pale, her hair that was fair. Her skin would burn into sun.

They gave her lots of work to do, they did not like the girl. Consequently, when she had finished with her work, she would go by the river, and spent most of his time, in the company of the animals. Birds, and a hippo, that came out of the river, to be close to her. One day, the old man, went down to the river, and saw her dancing. She was such a beautiful dancer, he thought, that she should have some shoes. So, he made up some shoes, from gold and rose, and leather. So. she had this beautiful pair of shoes.

There was a party organised, in Memphis, by the pharaoh, and everybody were invited. The servant girls wanted to go to the party, but obviously, they did not want Rhodopis, to go. So they gave her a lot of works to do. When she was finished with the jobs, it was too late, to go to the party, so she went by the river. She was singing a song, and somehow this sing annoyed the hippo and the other animals. So the hippo, splashed into the water, and one of her shoe got wet. So she took off the shoes, and put them on one side, to dry in the sun. And suddenly, a falcon appeared, and stole one of her

shoes, and flew away with it. It happened to fly, where the party was, and dropped it, right into lap of the Pharaoh, who though it was a sign from Horus.

He thought, he must investigate to know to whom it belongs. So he decided to go on a journey, down the Nile, and try to find the woman, to whom the shoe, belong. He spent some time doing it, until he eventually arrived to the place, where Rhodopis lived. All the servants girls, tried on the shoe, but obviously, it did not fit any of them. Rhodopis was shy, and hid in the bush. The pharaoh saw her eyes, blinking, through the brunches of the bush. And he called her out, to try the shoe. She did, and obviously, it fits. They got married.

3a

There is a Greek girl called Rhodopus, who gets to Egypt and she gets sold to an old man. He is really nice to her, and he spends all of his time under a tree. She is very alone, she does not have any friends, the other servants do not like her. She has to wash her own clothes, and mend her own clothes. So she spends a lot of time down the river to do so.

She is dancing out by the river, and her master sees her. And he thinks that she dance so beautifully, that is a shame that she does not have any shoes. So he buys her a pair of dancing slippers.

The pharaoh holds a banquet, and everyone goes to. All the servants go. She goes on the river, while there is the banquet. She is dancing by the river, and a hippo in the river splashes in the water and get one of her slipper wet. She takes one and puts it in her robe, and dries it. A falcon comes, and picks a slipper and flies away with it. He then dropped it on the pharaoh during the banquet, and he is bored because he would rather be in the battle, rather than be in the banquet. He is enchanted by the slipper and thinks that whoever owns it must be very interesting. After the banquet, he goes and searches all the houses of the servants to find who owns the slipper. The servants try to hide Rhodopis, because they did not like her, and they do not want her to be the one with the slipper. But the Pharaoh sees the girl and makes her try it on, and she is going to be his Queen. The servants protest saying she cannot be the Queen, because she is not even Egyptian. And the Pharaoh says: she is the most Egyptian of all, because her eyes are green like the Nile, the skin is white like papyrus, and her lips are red like rose.

3a1

There is a Greek girl named Rhodopus, she was sold to Egypt to an old man. He had a lot of servants there. She was good to the servants, but they did not like her, made her to do lots of staff, like washing clothes. She does not have any friends in Egypt, but she has a lots of animal friends. When she was washing the clothes, down to the river, she used to sing and dance for them.

One night, when she was singing and dancing, her old master saw her do it. He thought it was pity that she dance so beautifully, but did not have any shoes. So he bought her a pairs of dancing slippers, which were made of roses and gold.

One day, the Pharaoh invited all servants to the feast, and the servants dressed up very beautifully. But since they did not like the girl, they made her do lots of jobs, and took away the raft, so she could not go to the feast but only do her jobs, like washing the clothes.

She brought her slippers down to the river, and singing and dancing there, but the hippo got into the water, and splashed on the slipper. So one of the slippers got wet, and she let that slipper to dry out, and put the other one into her robe, and kept singing and dancing again. Then a falcon took her slipper.

The pharaoh, who was very bored at the feast, because he would rather go to the battle, found the shoe. He decided that whoever owns the shoe, he would marry her and make her become his Queen. He went to the servants' house, to find out to whom the shoe was, and he found Rhodopus. It was her shoe.

The servants protested because she was not even an Egyptian. But the Pharaoh said she was the most Egyptian of all, because she got eyes are green as Nile, the skin was pale, and her lips are red as lotus.

3b

There was a girl and she was from Greece, but she was kidnapped by pirates and taken to Egypt. She was purchased by a kind old man. The kind old man favoured her, which made the other servants jealous. There was also an antipathy to her, because she had different physical characteristics such as skin and hair colour. She ended baring a lot of work of the place. She has to go down to the river and do a lot of washing. When she was down there, she was speaking with animals, in particular a hippo. She was singing and having fun dancing with them.

One day she heard about this festival that the pharaoh was hosting, with a lot of dancing. Unfortunately, she was not permitted to go because she had too much work. The other servants went without her. The old man took pity on her, because he knew she likes dancing, he favoured her. So he gave her a pair of shoes in which to dance. Once she received them, she got one of them wet somehow. While she was taken the shoe off, a falcon came and picked one of the shoe and flew away. The falcon flew where this festival was going on, and dropped the shoe that ended in the possession of the pharaoh. The pharaoh finds the shoe, and actually, he was sick at the party because he did not want to be there, he prefers being in the desert. He took the shoe falling from the sky as a sign. He says he will go and find to whom this shoe belongs to. The other servant who heard of this came back home. They realised what was going on, and the protagonist of the story hides because she did not want to receive any retributions from the servants, because they were jealous. While this was happening, the pharaoh sailed to the river with his raft and disembarked the raft. He said he was going to make all those people try on the shoe. He tries the shoe on all the servants but fit none of them. He spotted hiding away the protagonist of the story and called her. He puts the shoe on her and it was a perfect match. They marry and live happily ever after.

3b1

Its starts with a girl called Rhodopis, she is from Greece, but she was kidnapped by pirates and taken to Egypt where she becomes a slave to a man who sleeps a lot. The other slaves bully her because she is different from them so she escapes and go down to the river where she dances. One day, her slaver sees her dancing, thinks she is incredible and gets her some shoes make of golden rose and leather. The other girls get jealous. there is a party in Memphis which pharaoh throwing. They are giving her a lot of different tasks, in the hope she cannot find any time, which she didn't. so she gets upset, she goes down by the river, and the scene she does annoys the hippo. The hippo gets angry splashed her and she takes the shoes off and the eagle comes and grab the shoes and flies away with them and throws them in the lap of the pharaoh. He thinks they are beautiful so tries to find the person whom owns them, eventually he ends up in the slave's house where she is. The other slave girls try them on, but the shoes don't fit them. Rhodopis is hiding in the bushes because she is shy. She tries them on and they fit and they get married.

3b2

There once was a girl called Rhodopis, she was from Greece, but the setting is in Ancient Egypt, cause Rhodopis was captured by pirates and sold in slavery, in Egypt. There was a kind old man, but the other slaves did not like Rhodopis, because of her colour of her skin, and how fair it was. So, Rhodopis liked to get away, and go and dancing by the river, where she made friends with some birds, and a hippo. And one day, the old man saw her at the river, and she was dancing. He thought she was dancing so beautifully, that he will make her some shoes. He made her some shoes from leather and golden rose.

It came to the Pharaoh, in Egypt, he was throwing a party and all the servants wanted to go to the party. They did not want Rhodopis to go, because they did not like her. They gave her a lot work, and by the time she finished the work, it was too late to go.

She went down to the river, sad, and starts singing. Her song disturbed the animals, and the hippo splashed the water on her shoes. A falcon flew and stole one of her shoe, and flew in the direction of the party, and dropped it on the lap of the pharaoh.

The pharaoh thought it was a sign of Horus, and he set off down the Nile, to find out the answer. Eventually, he came to the house where Rhodopis and the girls were working. All the servants tried on the shoe but obviously, it did not fit. Rhodopis was shy, so she hid in the bush, and the pharaoh saw her eyes blinking between the leaves of the bush. He asked her to try on the shoes, and obviously, it fits, and they got married.

4a

There is a young greek girl called Rhodopis, and she goes to Egypt to an old man as a slave. He is very nice, quiet, spending his time under a tree. The rest of the servants do not like her and are mean to her, which means she has to do all by her own, washing and mending her own clothes. She spends a lot of time down to the river, and one day she is dancing down there and her master, who is sitting under a tree, saw her, and thinks she is just a beautiful dancer and he wants to buy her dancing slippers.

Then there is a banquet hold by the pharaoh, and everyone is invited, including the servants, and during the banquet, Rhodopis goes down to the river and she starts dancing. The hippo in the river splashes her gets one of her new slipper wet. She wrapped it in her robe to dry, and a falcon comes and take the slipper. He drops it in the lap of the pharaoh. The pharaoh is really bored because he would be rather in the battle than in the banquet. So he is enchanted by the slipper. He wants to find out who is the owner of the slipper because he might be very special and interesting. So when the banquet is finished, he went down to search every house and try to find this girl. The rest of the servants tried to hide her because they don't like her, and don't want him to find she was the girl with the slipper. He does find her and she tries the shoe on, and he wants her to become his queen. And all the other servants protest saying it is not fair because she is not even Egyptian. And he said: she is the most Egyptian of all because her eyes are green as the Nile, her skin is white as papyrus and her lips are red like roses.

4a1

Rhodopis is greek and she was set in Egypt as slave, and she has an old master. She was very beautiful and she did all the house chores. The old master has many other servants and they did not like her very much but she would care about her house and her duties and go down by the river to do washing. The forest animal like her very much and she would singing and dance doing her chores. One day, the old master saw her singing and dancing and he thought it was very nice that she sing and dance so nicely, but she did not have any shoes. So he bought her a pair of dancing slipper.

The pharaoh was having a ball, a feast for the servants, and she wanted to go and the rest of the servants did not like her, so they gave her a lot of chores to do, and took away the raft so she could not go. While she was doing her chores, she took the slipper with her, and a hippo got into the water and wet one of her slipper. She put the slipper out to dry and the other one in her pocket.

Something happened to the shoe that was out to dry, and somehow it ended up with the pharaoh who was very bored at the banquet with the servants.

He decided that whoever had the other slipper, he was going to marry her, and make her the queen. He went to a particular house and he saw Rhodopis, and he said he was going to marry her. The other servants protested, saying she was not even Egyptian. He said she was more Egyptian than everybody, she has green eyes like the Nile, soft pale skin like the lotus.

4b

There was a girl whom was from Greece, and she was kidnapped by pirates and taken to Egypt; where she was bought by a kind old man. She was though physically different from the people who worked for the old man, because she had different hair colour and eye colour. For this they did not like her, and gave her a lot of work to do; but still the old man liked her. So she went down to the river, and was dancing and singing with the animals, particularly a hippo.

Once she heard about a festival, which was a dancing festival that the pharaoh was organising. But she could not go because she had too much work. But the old man took pity on her, bought her some dancing shoes. Then she was washing, and one of the shoes went wet, and a falcon took the shoe. The falcon took to it to the dancing festival, where the pharaoh found it. And the pharaoh did not want to be there, because he wanted to be in the desert. He decided that he was going to find the owner of the shoe.

He said he was going to make everyone try on the shoe to see if it fits, and the servants heard about this, and came back home. The young girl did not want to get retributions from the other servants, so she hid. Then when the pharaoh was coming to make everyone try on the shoe, he saw her hiding, and made her try the shoe, it fits, and they live happily ever after.

4b1

There was a girl called Rhodopis, she was from greek, but some pirates kidnapped her and brought her to Egypt where she was a servant with some other girls. An old man had a place with the servants and he was really nice, and he sleeps a lot. The servants were jealous of the girl because the old man gave her some rose golden shoes with leather, and the servant girls did not like her. The Pharaoh made an event for dancing and the servants did not want the girl to go. The girl was dancing by the river, she took off her shoe, and the pharaoh found her shoe and wanted to find who the shoe belonged to and so he was looking everywhere to find the place. Then he found the servants place, he tried the shoe on the servants, but it did not fit. Rhodopis was very shy so she was hiding in the bushes and then she tried the shoe, it fitted, and they live happily ever after.

4b2

The story is based in Greece, at the Ancient Egypt time, where there is a girl called Rhodopis, and she was sold into a slavery in Egypt. People did not like her because of her colour of the skin, but there was a kind man, who likes her. So she went down to the river, to escape the people who were mean to her, and start dancing. The old man saw how beautifully she was dancing, and he made her a pair of leather shoes. Before this, when she was at the river, she made friends with a bird and a hippo.

There was a party in Egypt hold by the pharaoh but he did not want her there because he did not like her. Rhodopis was upset about this so she went back to the river and start singing. But this disturbed the animals, so the hippo splashed her and the water went on her shoes. Then an eagle came and took one of her shoes, and flew in the direction where the party was happening. The eagle then dropped the shoe and land on the pharaoh lap. He though it was a sign for something, so he went down the river to try and find what that thing meant.

Rhodopis's family help the pharaoh tried on the shoes, but Rhodopis was quite shy and she stayed away. He saw her eyes blinking through the bushes in the leaves, and he called her out to try the shoe and it fits and they got married.

RHODOPIS SECOND GENERATION

1a

The story is about a young maiden, named Rhodopis. She's from Greece, but she was kidnapped by pirates, and taken to Egypt and sold into slavery. She was bought by a kind old man, who spent most of his time, sleeping under a tree, all day. But because he spent most of his time sleeping under a tree, He didn't see how horrible the servant girls were to her. They make fun of her because she looked different. Their hair was black and straight, hers was golden and curly. Their eyes were darker, hers were green. Their skin was copper, and her skin was pale and she burned easily, so they called her Rosie Rhodopis. So they gave her a lot of work to do, they would make her mend their robes, and wash clothes, and chase the geese from the garden, and bake bread, and they were very hard on her. So her only friends were the animals, she taught the birds to eat from her hands, there was a monkey who would sit on her shoulder, and there was an old

hippopotamus, that would come up on the banks to be near her. So at the end of the day, since she had no friends, if she wasn't exhausted, she would go down to the river and hang out with her animal friends, and sometimes she would dance. And one day, the old man woke up from his nap, and saw her dancing. He saw how beautifully she danced, she was very light on her feet, so like they barely touch the ground, and he thought: She must have shoes. So he ordered a special slippers for her, made out of red rose gold, and they had leather on the bottom. When the servant girls saw her shoes, they hated her more than ever, there were meaner to her.

So one day, it was announced that the pharaoh was going to hold court in Memphis, and everyone was invited. So the servants girls were very excited about going, and they put on their fine clothes. And as they pulled away their boat from the shore, they had given Rhodopis even more work to do, and left her on the back. And so Rhodopis was very sad, and she started singing a sad little song. That irritated the hippopotamus, and so he went back into the water, and when he did it, he splashed water on her slippers. So she was upset that her slippers were wet, so she went and got them and she tries to dry them off, and put them someplace to dry, and went back to her work. But then the skies went dark, and a falcon swooped out of the sky, and grab one of her slippers and went off. She knew this was the Egyptian god Horus. So she took the other slipper and put it in her tunic. She Finished her work and went back.

So the pharaoh was in Memphis holding court, and he was very bored, he'd rather be driving his chariot across the desert. And the falcon dropped the slipper in his lap. So at that time, he decided he knew this was something from Horus. And he decided, at that moment, he would go try to find the maiden, whose foot, would fit into the slipper, and she would be the queen of Egypt. So he left before the servants girls got there, and he went all over the land, and he couldn't find the maiden. So then he decided to take his barge and go down the Nile, and he would stop at every port and try to find the maiden. So as he was coming down the Nile, just before he got to where the servants girls and Rhodopis lived, all servants girls saw him, and they wanted to run out and try to fit into the slipper. So when they saw the slipper, they knew it belong to Rhodopis, but they said nothing. Instead they just tried to force their feet into the slipper, meanwhile Rhodopis were hid in the rushes. But the pharaoh saw her, and he insisted that she come out, and try on the slipper. And of course, her tiny foot slip perfectly into the slipper. And he declared her the queen of Egypt. The servant girls were angry and said she was not even Egyptian. And he said: she's the most Egyptian of all, as her eyes are green as the Nile, her skin is like the lotus flower, her hair is soft and feathery like the papyrus.

1b

This story is about Rhodopis, set in Egypt, but she was born in Greece and was captured by pirates and sold as a slave, to an old man, who mostly slept under a tree. Because he was sleeping under a tree, he did not see that the other servants would tease her for how she looked differently. They had straight black hair, and she had curly, blonde ringlets. They had brown eyes and she had green eyes. They had bronze skin, and she had skin that burned easily in the sun, make them called her Rosy Rhodopis. And she didn't have any friends there, but she made friends with the animals instead. She let the birds eat from her hand, the monkey to sit on her shoulder, the hippopotamus would come out of the river to be close to her.

When she wasn't too tired, to get down to the river in the evening, she would sing and dance with her animals friends there. One evening as she was dancing, the old man wake up and saw her doing so, and thought that someone who danced so beautifully, shouldn't be without shoes. So, he ordered a special pair of gold-rose slippers, for her to wear, which the other servant girls were extremely jealous of, and dislike her more.

And now, the pharaoh was holding court and he ordered that everyone could come. The servants were going and she was going to, because there would be dancing and singing, and food. But as they were leaving they ordered her, to do even more jobs.

She was down by the river, washing the clothes, and singing a sad song. And the hippo went back to the river because he was so fed up, and in doing so, it creates a little wave which wet her slippers. So she quickly took them off, wipe them

down, and put them in the sun to dry. And then, it went dark and she looked up and she saw a falcon, swiped down and take one of her slippers. And she knew that it was Horus. She grabbed the other slipper and put it in her tunic.

The pharaoh, of upper and lower Egypt, was sitting on his throne and feeling very bored, because he preferred riding a chariot in the desert. When this falcon dropped the rose gold slipper on his lap. And he realized it was a sign from Horus. So he ordered that every maiden should try on the slipper, and whoever it belongs too, would be his queen.

By the time the servants girls arrived, he left the party, to go around Egypt, so that women could try on the slipper, and he could find the owner. After searching off the land, he ordered his raft and went down the Nile, stopping at every landing station along the way. As he rounded the bend towards Rhodopis's home, the servants girls saw him coming, and she hid in the rushes. When they saw the slipper, they recognized it was Rhodopis's, but they didn't say anything, and tried on anyway. But it didn't fit. And Then he spied Rhodopis hiding, and made her try the slipper that fit to her. She then gave the other slipper, and she was asked to be his Queen. The servants girls were angry, because she wasn't even Egyptian. He replied that she's the most Egyptian of all, as her hair are feathery, her eyes as green as the Nile, and her skin as pink as the lily.

2a

There was a girl from Greece, who was kidnapped and sold into slavery in Egypt. She was bought by a kind old man, who was very lazy, and slept under a tree, all day, and everyday. But because he slept under a tree, he did not see that the other servants girls were really mean to her, and made her do all the jobs.

So, she made friends with the animals, she taught birds to eat from her hand, a monkey sat on her shoulder. She used to go down by the river, and be friend with an old hippopotamus. She used to dance along the river banks, and the old man woke up and saw, how beautifully she danced. She danced so light, that her feet barely touched the ground. He said, she had to have shoes, so he made some rose-gold shoes, made for her.

The girls heard that the Pharaoh was holding court in Memphis, and everyone was invited. So they gave Rhoipus, lots of jobs to do, and they went off to court. And Rhoipus, was very sad, and start singing a sad song, that annoyed the old hippopotamus. So he went into the river, and splashed her, and got her slipper wet. She left her slipper out to dry, and the sky went dark, and an eagle swept down, and stole one of her shoes. She hid the other one in her tunic.

The pharaoh, was really bored at court, because he much rather be driving his chariot through the desert, so the eagle dropped the slipper in his lap. He, as well as Rhodopus, knew it was a sign from the god Horus.

He decided, he will find the person, whom the slipper belongs to, making her the Queen of Egypt. He went looking everywhere, he went down the river, on his barge, stopping by all ports along the way.

He got to where the servants girls were, that they were washed out, trying to put the slipper on, but it did not fit. They knew it was Rhodopus, but they did not want to say, it was hers. Then the pharaoh, saw her hiding in the reeds, and told her to come out to try the slipper on. Obviously, it fits perfectly, so he declared her the Queen of Egypt. But the other servants girls, were really angry, and said she is not even Egyptian, and so he said: "she is the most Egyptian of them all, because her eyes are green like the Nile, her skin is quite like the lotus flower, and her hair is feathery like papyrus".

2b

The story is about a girl who was sold as a slave to the Egyptians, she was from Greece. Since the start, the Egyptians slaves did not accept her, because they noticed she was different. Her skin colour was light, they had dark colour skin, and her hair was curly.

They always treated her badly, and she did not have any friends among the slaves. She was friend with the animals, she enjoyed time with monkeys and birds, she allowed birds to eat from her hand. She also sings and dance in a very beautiful way.

Once the old man, who bought her, noticed that she was beautifully dancing, and he thought she deserved to wear shoes, and she could not be without shoes like the others, because she could dance so beautifully. He gave her a pair of rose slippers, and this cause that the others slave envy her and rejected her more.

Once there was a party that provided food and music and other things. She was invited but the other slaves gave her more work, so she could not attend, because they did not want her to be there, to have fun.

She was washing clothes in the river, and then one of her slippers went wet. She put it to dry next to river, and accidentally the shoe fall in the river. She kept the other shoe.

The river reaches a place where the prince of Egypt was resting. As he was by the river, suddenly the slipper appeared on his lap. He thought it was a message from the god Horus. He said he will find the person who owns the slipper and she will be his Queen. He started to look at the person in the kingdom, and when they went in a place where she worked, the others recognised that the slipper was hers, and they did not want her to be discovered and they did not say anything. They tried to fit the slipper, but nobody could do it. One of the prince's servant noticed she was hidden, so they asked her to fit the slipper. It fits her well, and also she had the other slipper. The prince took her as queen even if she was physically different, because it was also noticeable for him that she was not from Egypt.

2b1

It is a story about a girl called Rhodopis, she was born in Greece, but she was kidnapped by pirates, and sold to a man who lived in Egypt, and so she became an Egyptian servant girl. The man she was worked for, was always asleep under a tree. The other servants girls were always pick on Rhodopis because she did not look the same as them. She had blonde, curly hair, green eyes, and pale skin that burned easily in the sun, while they all had dark hair, and dark eyes, bronze skin that was not affected by the sun. Because the man, she worked for, was always sleeping under the tree, he didn't know they were teasing her. So she was very sad.

Because they were all pick on her, she did not have any friends, so she would go down to the river to be with the animals, and dance for them. She would let the monkey to sit on her shoulder, feed the birds out of her hand, a hippo would come to the river to play with her, and she would dance by the river, because she would like to dance. One day, the old man who owns her, saw her dancing down by the river, and he thought it was unfair, that someone so good at dancing, did not have any shoes. So he ordered for her some gold-rose slippers, especially made for her feet. She would dance in them, and all the other servants girls were so jealous of her, cause she had pretty shoes and they did not.

One day, the Pharaoh, who owns the Egypt, ordered to all the servants to come to the palace. All the servants were going, and also Rhodopis, because there would be singing, and dancing, and food, and entertainment.

On the day, the other girls made her do a lot of chores, more than she was used to do. So she was down by the river, washing clothes, singing sad to herself, that she had more chores to do. All the animals were there with her, and the hippo was so fed up with her singing sadly, that he went into the river, and as he did so, he cause a wave to hit her slippers. They were all wet so she picked them up, and she put them to dry in the sun. In doing that, she saw a falcon come down, and he stole one of her slipper. She knew that the falcon was the god Horus. She took the other slipper, and she put in her tunic to protect it.

Back to the palace, the pharaoh was sitted on his throne, feeling very bored, because he would rather be in the chariot, riding in the desert, rather than sit, listening people dancing and singing. The falcon came, and he dropped the slipper in his lap. He knew, it was the god Horus. So he decided that he would find the owner of the slipper, and whoever was, would be his queen. By the time, all men and servants girls got to the palace, he was already left, going on searching the owner of the other slipper. So he searched half of Egypt, and could not find her, so he ordered his men to get his raft, and

he went all way down the Nile, stopping at every house on the way, to see if the slipper fit anybody. As he turned the corner, to come to the house where Rhodopis and the other servants girls were, Rhodopis went to hid.

He showed the slipper to the servants, who knew it was Rhodopis's slipper, but said anything, and tried it anyway, and obviously, it did not fit them. He saw Rhodopis hiding and so, he asked her to come and try on the slipper, and of course, it fitted her, and she gave him the other slipper. And he decided she would be his queen. The servants girls were very angry about that, because she was not even an Egyptian, because she did not look the same. He said: "she was the most Egyptian of all, because her hair was like feathers, her eyes as green as the Nile, and her skin was as pink as the lily".

3a

There was a girl who was from Greece, she got kidnapped and got sold in Egypt. She was stick into slavery to a kind old man, who bought her. He was very irresponsible house owner, so he left his servants to do all the jobs. There were many servants, and they were mean to the new girl. They bullied her, and they gave her lots of work to do. The girl was not broken, but she was still hopeful in life. Instead of she starts making friends with the servants, she makes friends with animals. She liked dancing, so she danced by the river, everyday when she has the time. One day, her owner saw her dancing. He realises that she was dancing really well and decided to buy her golden rose shoes. Other servants knew about that, and they were jealous, because she received the shoes, and they did not receive anything.

One day, the pharaoh decided to have court in Memphis, and everyone was invited to court. The servants wanted to go, but they did not want her to go. So they left all the house works to her, and went to court and have fun. She was so sad, and sang a sad song that annoyed the hippo, who happens to be her friends. He got mad and wet her shoe. She let her shoe out to dry.

An eagle happened to be there, and stole one of her shoes. And took it all the way to the vicinity of Pharaoh and dropped it on his lap. Since the pharaoh was really bored, since he does not like court gathering, he decided it was a sign from the god, and he has to find the owner of the shoe, and make her his Queen. So he went down the river to find the owner of the shoe. All the servants were trying the shoe, but obviously, it did not fit. They knew the shoes belong to Rhodopus, but did not want to tell the Pharaoh. Fortunately, the pharaoh spotted her hiding behind the reeds, and asked her to try the shoe, and it fitted perfectly. He declared her Queen. But the others did not agree, because she was not even Egyptian, she was Greek. And the Pharaoh says: she is most Egyptian of all, her eyes are green as the Nile, her skin is fair, and her hair as light as the papyrus.

3a1

There is a girl named Rhodopus, she is Greek but was kidnapped, and brought into Egypt by an old man. The old man spent all of his time under a tree, sleeping, so he did not notice that all the other servants girl were giving Rhodopus all the work to do. Because of that, she was used to spend time alone, she made friends with the animals. She had a hippo as friend, and she spent time singing and dancing. One day, the old man saw her dancing on the riverside, and he thought it would be nice for her to have some shoes. He had for her some golden shoes.

The pharaoh had an event; the other girls did not want her to go, so they gave her so much work to do, so she could not go.

She was behind, and she went to the river with her golden slippers. As she was singing out of depression, because she was unable to go, the song was so bad that annoyed the hippo. The hippo went into the water, and splashed the water and got her shoes wet. So she put them to dry, and as it was getting dark, an eagle picked up one of the shoe, and took to the palace and dropped into the pharaoh's lap. The pharaoh saw it as a sign of the god Horus.

Since the pharaoh would rather ride his chariot in the desert, than sitting in the palace, he took the shoe and went to look for the person who had the other shoe, and made her his Queen. He went to check along the riverbank, and the other servants tried on the shoe knowing it was Rhodopus's shoe, but it did not fit them. Then the pharaoh saw her hiding in the bushes, and asked her to try on the shoe. Obviously, it fits and he said he was going to make her his Queen. But,

the girls complained saying she was not even Egyptian. He said she was the most Egyptian of all of them, because her eyes were blue as the Nile, and her skin was feather as papyrus.

3b

It is about a Greek girl who got sold to the Egyptians. She is not like the other slaves in Egypt, because she has light skin. But she is seen by her owner dancing very beautifully, one day. He decides that she needs rose shoes, so she can dance beautifully, that she deserves shoes. This makes the other slaves jealous of her.

There was a party to where this girl wanted to go too, but the other slaves gave her a lot of work to do so she could not go. Obviously, she was quite upset, and so she went to the river where she has animal friends, but she leaves one of her slipper there. The shoe flow down to the river and the prince of Egypt happened he was bearing in the river, and the shoe ended up in his lap. He thought he was a sign from the god Horus and so whoever that shoe belongs to, she will be his wife, the queen of Egypt. He sets out to find out to whom this shoe belongs. And obviously no one could fit in the slipper. The slaves realised it was the girl's slipper and they hide her away. A good Samaritan says it was her and she tries on the slipper, it fits, and she also has the other one. He marries her, and accepts her even if she looks different.

3b1

It is the story of a girl called Rhodopus. She was born in Greece, but she was kidnapped by pirates and sold to a man in Egypt, to become a maid. All the other maids picked on her, because she did not look the same as them. She had blonde hair, and green eyes, while they had dark hair and dark eyes, and they looked Egyptian. She had no friends, and she was very sad. What she did was to go down to the river, and befriends with the animals. She played with the monkey, and she fed the birds. She became friends with a hippo, as well. By the river she would dance, because she enjoying dancing.

Meanwhile, the old man who owned her, did not have any idea that she was picked by others girls, because he was spending his days sleeping under a tree. But one day, he was awake, and he saw her dancing by the river. He thought it was unfair, that someone who can dance so well, should not have shoes. So he had a pair of rose slippers, especially made for her. Of course, the other servants were very jealous, because she had beautiful slippers, and they did not.

Then, the pharaoh of Egypt, organised a kind of event, and he invited all the servants of the country to come to the palace. On the day of the party, the other girls gave Rhodopus more chores than usually, because they were jealous and did not like her. As she was very sad, and she went down to the river, doing the laundry. She was singing all these sad song, about how they treated her so unfairly, and the hippo got annoyed with it. He turned around and went into the river, causing a big wave that makes her slipper wet. She took the slipper off, put in the sun to dry. And then a falcon came, and took off the slipper. She realised that the falcon was the god Horus. She took the other slipper and hid in her coat.

Meanwhile, the pharaoh was already in his palace, ready to the party, but he was bored because he was not looking forward to an afternoon with people singing and dancing. He would rather ride his chariot in the desert.

The falcon came and dropped the slipper on his lap. He do realise it was the god Horus, and decided he should go looking for the owner of the slipper, a person who can fit it, and make her his Queen.

Instead of waiting for the party, he went and searched half of Egypt, for the person who can fit the slipper, but he found no one. Then he got the raft and went down the Nile to every house, to let all the women try on the slipper.

He got near the house where Rhodopus and the other servants lived, and she hid from him. He led the other maids to try on the slipper, and they recognised it, and knew It was Rhodopus's but decided not to say anything. He saw her hiding in the corner, and he asked her to try on. Of course it fitted, and she could give him the other one. He decides she will be his Queen. The other maids were very jealous and said: she is not even Egyptian, she looks different.

He said: she is the most Egyptian of all, because her hair is feathers, and her green eyes are like the Nile, and her rosy skin is like the lily.

3b2

The story is about a girl called Rhodopus. She was from Greece originally, but she was kidnapped by some pirates, and they took her to Egypt, and sold her to a man, who made her into a servant girl. The man she was working for, used to sleep under a tree a lot. He never realised that the other servant girls were teasing her, making fun of her, because she did not look Egyptian. She had pale skin and green eyes and blonde curly hair. While everybody else had dark eyes, dark hair, and bronze skin. They never used to burn easily in the sun, while she did. One day, because she was very upset, she was used to go down to the river, and she used to play with all the animals, the hippo, and dancing and singing there. The man she worked for, saw her dancing by the river, and he thought it was pity that someone who can dance so well, did not have any shoes.

He had some shoes especially made for her, which were rose and gold. All the other servant girls were very jealous when they saw she had these special slippers.

One day, the pharaoh of the land, decided he was going to host a party for them, to sing and dance, and to have a feast. When the day came, the other servants make sure the girl had a lot of chores to do.

So she was by the river, when everybody else went to the party, and she was singing a really sad song. And the hippo got tired of listening her singing the sad song, so he went down in the water, and he causes a wave to splash on her shoes. So because the shoes were wet, she took them off and put on the side to dry. A falcon came, and it took one of her golden shoes. She knew it was the god Horus. It took the slipper.

In the palace, the Pharaoh was very bored, because he would rather be in the desert, riding his chariot, rather than watching people dancing and singing. At that moment, the falcon came, and dropped the shoe in his lap. He knew, at that moment, it was the god Horus too.

He decided that whoever had the other slipper, would be his Queen. He searched half of Egypt looking for the girl with the other slipper. But he could not find anyone. So he asked his men to take the raft, take it down the river, and stop to every house on the way, to see who had the slipper. When he arrived at the girl house, she was hiding behind the other servant girl. Even if the other servant girl knew it was her slipper, they did not say anything, and still they try it on, but it did not fit them.

Then the Pharaoh noticed her, and asks her to try it on, and when she tried it, it fits. The other girls were really upset because she was not even Egyptian. And the Pharaoh says she was the most Egyptian of all, because she had eyes as green as the Nile, hair as soft as feathers, and her skin as pink as lily. And then she becomes his Queen.

4a

One day a Greek girl was kidnapped by an old man became his slave. The old man has many slaves and they had a lot of work to do. The leader of the slave treats the girl very mean and he gave her a lot of work to do. But the girl is very hopeful and she tries to make friends with other slaves and animals. The girl loves dancing. One day she is dancing and the old man noticed her and thought that she danced really well. So he decided to buy her a rose and gold shoes. Then the other slaves are jealous because they don't have it. One day the owner decided to have a party and they invited all the slaves to go. But the slaves do not want the girl to go so they left all the work for the girl and they just go to the party.

The girl shoe was stolen and the pharaoh got it, so he wanted to find the master of the shoe, that's why he came to the party and ask everyone to try the shoe to see if it fits for anyone. Obviously any of them fit on the shoe. At this time he noticed the girl and try on the shoe, and the shoe belongs to her. He decides to make her his Queen. The other slaves objected because they say the girl is not Egyptian. The pharaoh say she is because she has green eyes, pale skin, and light hair.

4a1

Rhodopus was brought to Egypt by an old man, and she is Greek, but the old man spends a lot of time sleeping under a tree, so he did not realise that the other girls were giving Rhodopus all the tasks to do, and it was not fair. She would go and dance by the river, and the old man noticed it and decide it will be nice to she could have some shoes. And he gave

her some golden slippers. Because the other girls did not like her, she made friends with the animal instead, and the animal was the hippo.

The Pharaoh had a big party, but she could not go because all the other girls gave her too many tasks and she was unable to go. She goes to dance by the river, wearing her shoes, and she starts singing. But because she was very depressed, she sang a sad song, and this annoyed the hippo so much. And the hippo caused a big splash and got her golden slipper wet. She put it to dry, and as it was drying it became late and dark, and the eagle swept and picked one of the slipper, and dropped the slipper in the lap of the pharaoh. And the pharaoh would rather ride his chariot in the desert than sit around the party. So he went out to see to who the slipper belong to. And whoever it belonged to its going to be his Queen. So all the other girls along the Nile were trying on the slipper and it did not fit. He found Rhodopis hiding and, obviously, it fitted because it was hers. He said he is going to make her his queen and the other girls complains saying she was not even Egyptian. And he said she was because her eyes were blue as the Nile, her skin was as papyrus.

4b

There is slave who has lighter skin than all the other slaves, but she is good at dancing. So her owner gave her some rose shoes, so that she can dance. She then wants to go to a party, but all the other slaves are jealous of her, and give her a lot of work. She is upset and so goes down to the river to talk to her animal friends. She leaves one of her shoes there, that flows down the river. The prince of Egypt is working in the river downstream, and the slipper lands on him. He thinks it is the sign from the gods. He searches whoever is the owner of the shoe and he will marry her, make her the queen of Egypt. He is looking for whoever the slipper is, but the servants hide her away. A good Samaritan says it is the slave who can dance well. He finds her, the shoe fits her and she has the other one. So they get married.

4b1

It's the story of a girl called Rhodopis, born in Greece but she was kidnapped by pirates and sold to a man in Egypt to be a maid. The other maids did not like her cause she has blonde hair and green eyes, and they had dark hair and dark eyes, so they picked on her and she went down to the river and where she plays with the monkey and feds the birds and make friends with a hippo. She danced by the river and The old man who own her never saw her dancing before because he was always asleep under a tree. When he saw her dancing, he thought then someone who is going to dance must have some shoes, so he had a pairs of rose slippers creating especially for her and that made other maids jealous because she had a nice pair of slipper. Then the pharaoh was having a party, and all the maids needed to be there, so and the other maids gave her more chores than usual. And this make her sad so she went to the river and told the hippo, and he got mad, and he went into the water and he created a big wave which makes the slipper wet. She took off the slipper and put them to dry. Then a eagle came down and took one of the slipper, which she knew to be the god Horus. Rhodopus kept the other slipper.

The pharaoh was not looking forward to his party because he wanted to be on his chariot riding on the desert, then the bird dropped the slipper at him and told him he needed to find the person who fits the slipper and make her his Queen. So he searched all the girls and he could not find a match, and so he took his raft down the Nile and to try to see who fitted the slipper. He stopped by the house where the maids where staying. He made the maids in the house to try on the slipper, and they knew it was Rhodopus by they did not say and she was hiding and he got her to put the slipper on, and it fitted. So then she is going to be his Queen but all the other maids where very jealous and saying she was not even Egyptian, and he said she is the most Egyptian because her hair are like feathers, her eyes are green like the Nile, and her cheeks are like the lily.

4b2

There was a girl in Greece and she was kidnapped by pirates and sold into slavery in Egypt, she was given to a guy who would sleep underneath a tree quite a lot, so he would not really pay attention to the other slaves who were bullying her

because she was not Egyptian. she had instead of their dark hair and dark eyes and bronze skin, she had blonde curly hair, green eyes and pale skin and so she burned easily in the sun and became pink.

So the girl was often quite upset and went down to the river, to play to with the animals, a hippo, and she would dance. One day the slaves' owner saw her dancing and thought it was quite pity, that a slave who could dance so beautifully was not owning any shoes. So he had her had shoes roses coloured, and perfectly fitted her. But the other slaves got quite jealous of her because they wanted the same shoes.

The pharaoh of the country decided to have a dancing feast for everyone. The slaves girls made sure that green eyes, blonde greek slave girl had been given so many tasks that she was not able to actually go to the feasts. This result in her being self-wondering pity down the river where the hippo got so annoying with her singing that he went under water, resulting in a big splash which wet her shoes, and she took her off and put them aside to get them dry. There was a falcon who was an Egyptian god and he came down from the sky and took one of her shoe and the girl immediately realised it must have been the Egyptian god. The falcon took the shoe back to the pharaoh palace, where the pharaoh was getting so bored with the dancing and singing, because he would rather be in the desert riding a chariot. When he saw the shoe he realise that the person who own the other shoe would be the perfect fit for his queen. He started to watch everywhere to try to find the owner of the other shoe, but they could not find it resulting in him having soldiers going down the river on the bark, and checking every single house. By the time he got to the house of the slaves girls, they kept quiet. The greek slave girl was hiding in the back because she was quite anxious. The other slaves tried on the shoes, and obviously it did not fit, and eventually the girl was persuaded to try on the shoe and eventually she put it one and immediately fitted. This makes the pharaoh realises this would make her his future Queen. The other slaves girls were upset by the fact she was not even Egyptian. He pointed out that her hair were soft as feathers, that her eyes were the colour of the Nile, and her skin was pink as the lily which makes her the most Egyptian of them all.

SHEN HSIEN ORIGINAL TALE

The natives, called him: Cave Chief Wu. He marries two wives, one of whom died, leaving to him a daughter named Sheh Hsein. She was a very intelligent girl, and very clever in sifting gold. Her father loved her very much.

Afterwards her father died, she was mistreated by her stepmother, who often asked her to cut a wood at dangerous places, and draw water from deep wells.

Once, Sheh Hsien caught a fish more than two inches long, with red fins and golden eyes, so she kept it in a basin in which she poured water. Everyday it grew bigger and bigger. She changed the basin several times, but at last, it became so big, that no basin could hold it. Then she threw it into the pond behind their house, and fed it with food scraps. If the girl came to the pond, the fish would show its head using the bank as pillow. It would not show itself, when others came.

The stepmother knew that, so several times she waited on the bank, but the fish never appeared.

One day, she tried to cheat her daughter, saying: "Are you not tired? Let me wash your coat".

Then, she put on the girl's coat, and told her to draw water from another spring, which was several hundred miles away. The stepmother with her daughter's clothes, put a sharp sword in her sleeve, and went to the pond calling the fish. The fish then puts its head out of the water, so she called it.

She cooked and ate its meat, which was doubly more delicious than ordinary fish. She concealed its bones under a dung hill. The next day the daughter came to the pond but the fish was no there, so she start crying. Suddenly, a man in dishevelled hair, and dressed in rough clothes, came down from heaven, and consoled her saying: "Do not cry. Your mother has killed your fish. Its bones are hidden under the dung hill. Go back. Take the fish's bones and hide them in your room. If you want anything, only pray for it. Your wish will be fulfilled." The girl followed his advice and she got gold, pearls, dresses, and food, as soon as she wished for them.

One day, there was a cave festival, and the mother went to the feast, and told the girl to watch the fruits in the courtyard. When the girl noticed that her mother had gone far, she also went to the festival with elegant bluish clothes, and a pair

of golden shoes. Then the daughter of her stepmother stared at Sheh Hsien, and told her mother: "This lady looks very much like my elder sister."

The girl, having noticed that her stepmother and stepsister were suspicious, hurried back home, and thereby lost one of her shoes, which fell into the hands of the cave people.

The cave was near to an island, where there was a kingdom, named T'o Huan, whose military powers, was the strongest among more than thirty islands. The cave people then sold that shoe to the king of T'o Huan.

The king asked his men to try the shoe, but it was too short. So, he asked all the women in the kingdom to try it, but it was suited nobody. The shoe was as light as hair, and if a foot were fit with it, it would make no noise when walking on stone.

After having imprisoned and tortured the cave man, but having received no information about where the shoe came from, the King ordered his people to search every house. At last, another shoe of the same pattern was found at Shen Hsien's house.

The king of T'o Huan, searched that house and found Shen Hsien, and asked her to put it on her foot. Shen Hsien dressed herself in bluish clothes, put on those shoes, and came to the king. She looked as beautiful as a goddess. The she married with that king, took the fish's bones with her and went with him to his kingdom. The stepmother and her daughter were then killed by flying stones, and buried, for pity, in a stone pit named: "The Tomb of Regretful Women". If the cave people prayed to them anything concerning marriage, their wish would be fulfilled.

After the king went back to his kingdom, he made Sheh Hsien his first wife. In the first year, the king asked greedily, infinite numbers of jewels and jades, so the next year it stopped to answer the prayers. Then the king buried the fish's bones on the sea-coast together, with one hundred bushels of pearls, and enclosed it with gold parapet. Afterwards when the recruited soldiers rebelled, and the king was going to took them and distribute them among the soldiers, one night it was washed away from the tide.

SHEN HSIEN FIRST GENERATION

1a

There is a king who has a daughter, that he loves very much. At some point, he dies, and his daughter remains behind with her stepmother, and stepsister. The stepmother treats her very badly, and makes her do quite dangerous things. Like, she needs to go and get water from quite remote places. One day, she is collecting water, and she finds a fish in a pond, and feeds the fish. The fish keeps growing and growing, until it does not fit the basin anymore, so she takes the fish with her, to the pond behind her house. He keeps growing and he is a special fish, with red fins and golden eyes. The fish only shows himself to her, and not to anybody else. The stepmother gets some information about this, and she gets curious. So she sends the daughter away, saying: let me take your coat. So she goes to the pond to feed the fish, with the coat on. She calls the fish, and the fish puts his head up, and the stepmother slaughters the fish and eats it. The fish tastes twice as good as other fish. She takes his bones with her.

The next days, the girl goes back to the pond and calls the fish, but he is not showing. So she is in an absolutely tears. But then a man descends from heaven, saying that she should not worry, that the stepmother killed the fish, and she has taken the bones. He said where the bones are, and that she should take them, and put them under her bed. She brings the bones in her room, and when she does that, she can wish for things she wants. She wishes for nice dresses, pearls, clothes, and shoes.

One day, the stepmother goes to a big cave festival, together with her daughters, but no with that one girl. That girl needs to stay behind, watching the fruits. They all go away, and when they are away, the girl puts on a very nice blue dress, and golden shoes, and decides to also go to the festival.

When she arrives at the big festival, one of the daughters recognises her, and said that to the mum. The girl gets nervous, and thinks she should rush back. While rushing back, she leaves one of her golden shoes behind. Then she is back and all is good.

But then, one of these cave people, from the festival, found the shoe, that apparently it is a really beautiful and special shoes. It is very small, and nobody fits it.

There is an island very close to where the cave people live, with a strong military power, and a king who rules there. They found the shoes, and the king is intrigued, and wants to find the other shoe. So he commands to go to search for the other shoes, and they interrogates and tortures all these cave people.

He goes to look for the shoe, and search every house. At some point, they arrive to the house of the girl, and they find the other shoe of the matching pattern. The shoe is so special, because when someone fits it, it would make no sound when walking on rocks.

So they arrive to her house, they find the shoe of matching pattern. She will wear the shoe, and put her blue dress, wear the shoes. She appears in front of the king, and she looks like a goddess. The king asks her to marry him, she says yes, and he makes her his first wife. She moves with him to that island, with strong military power, and take the fish bones with her. The king becomes a bit greedy, and for the first year, he asks for all the pearls and gold. Then after a year, the resources are empty, nothing appears anymore.

The stepmother and daughters were brought over to the island, and killed by flying stones. Then they were put in the pit, that will be called: "the pit of the regretful women".

1b

The story is centred around a young girl, called Shen Hsien. His father dies, and she continues to live on, with her stepmother and her daughter. The girl is treated unfairly by her stepmother, who requires her to do tasks, like shifting gold, and chopping wood.

At some point, she catches a fish, and she puts it in a basin. She continues to take care of it, and he grows, and she continues to move it in a different basins. Eventually he exceeds any basins, so she put it into her pond. She keeps the secret from most people. But eventually, the stepmother gets an idea, that she is hiding that fish. The fish does not come out, and reveal itself to anybody but the daughter. So the stepmother sent her daughter away, saying she is going to clean her coat. She poses as the daughter, she calls the fish out of the pond, and when he reveals himself, she kills the fish, and eats it.

When the daughter gets back, she wonders about this, and she is very upset. A man descends from heaven, with very dishevelled hair, and tells her that her mother has hid the fish bones, in a dung pale. And if she recovers the bones, she can make any wish. She does it, she recovers the bones, and wish for pearls and riches.

At some point later, there is a festival, in the town, where the stepmother is. She then uses the fish bones to dress up, in a nice outfit, and attends the festival. While she is there, the biological daughter of her stepmother, believes she spots her. Because of this, Shen Hsien, runs away, and loses one of her slipper, in the process, which is then recover by the cave people. The cave people are near an island with a kingdom. The king of this kingdom, has his army search for people, who might be the owner of the shoe. Eventually they find, it belongs to Shen Hsien.

The stepmother and biological daughter are killed by stones from the sky, and as result of this, Shen Hsien marries the king. They rebury the fish bones, somewhere, so they can continue to make wishes, and get them distributed to the army. The fish bones eventually are washed away.

2a

The story is about this girl, whose father is a king. After a while, he dies and he leaves her with her stepmother, who makes her do all dangerous things. One of these things was getting water, from really far places. But she does it.

During one trip for getting water, she finds this fish, and she feeds him. He keeps growing and growing, until it does not fit the place anymore. So she takes him with her, to the pond, next to her house.

She keeps feeding him, and he keeps growing and growing. Her stepmother finds out, and she tricks her to give her coat, so the stepmother can trick the fish. The fish comes out, because the fish only comes out when the girl is there, but since the stepmother is wearing the coat, the fish comes, and gets killed by the stepmother. She eats it, and keeps the bones.

Then a creature from the sky, a man, comes, and tell the girl, who ha been calling the fish but he does not come, that the stepmother killed him, and had the bones. She needs to get the bones back, and put them under her bed. She does, and asks for jewels, gold, dresses, and everything is given to her by bones, because they are magical.

Then there is this festival, and everyone is going. The girl goes with fancy gold shoes. But, one of the daughters of the stepmother recognised her, and she escapes. She leaves a shoe behind.

People from the festival, found it, and took it to the Prince. The Prince wants to know to whom this shoe belongs to. He tortured people, for information.

Eventually, he gets to the house of the girl, and the girl has the other matching shoe. She wears it, with the blue dress. The prince asks her to marry him, and she said yes. She takes the bones with her, to the castle.

The Prince keeps asking for pearls and gold, until is all gone, and he has everything, there is nothing more to appear. He brings the stepmother and stepdaughters to killed them by throwing rocks. The bones are put where the fish was in the first place. And it is called: "the pond of the regretful women"

2b

It is a story about a young girl called Shen Hsien, whom father passes away. She ends up living with her stepmother and daughter. She is made to do a lot of different tasks, manual labour. One day she finds a fish, which she looks after. But the fish grows bigger and bigger in size. So, she hides the existence of the fish from everybody around her. Eventually this fish gets too big and she puts him in a pond. At some point, her stepmother becomes aware that Shen hsien is hiding something, and she sends her away to wash a coat. The stepmother disguises herself like Shen Hsien and goes to see the fish, which only reveals himself to Shen hsein. So he thinks that is her and it comes out, so the stepmother kills the fish and proceeds to eat him, and hides the bones.

Then Shen hsien comes back and she is sceptical about something, and a man from the sky, with dishevelled hair, comes and tells her about the dead fish; and that the stepmother has hidden the bones somewhere; and if Shen hsien recovers the bones she would get wishes. So Shen hsien does it and finds the bones. She wishes for reaches and pearls. Then a festival come to her town, so she uses the bones to get dressed up nicely, so she attends the festival in which the stepsister and stepmother are attending. At some point, the stepsister thinks she sees Shen Hsien, so Shen hsien flees, and in the process, she loses her shoe. Then the cave people find the shoe and their king send them to look for the owner of the shoe. Stones falls from the sky killing the stepmother and the stepsister. Shen hsien marries the king and they got the bones at this point. They bury them next to the kingdom, to get more wishes. They wanted to hand them up to the soldiers, but in the end the bones get washed away.

2b1

There is a young girl who lives with her father, her stepmother, and stepmother's child. When the father dies, the girl carries on living with the stepmother. The stepmother makes her due tasks, like collecting gold and chopping woods. One day, the girl called Shen Hsien, finds a fish. She brings him with her, puts him in the basin, and she looks after. The fish kept bigger, and she moved it from basin to basin. Until the fish is too big for any basin, and ends up in a pond. She does not tell anyone about the fish, she keeps him secret. The stepmother kept suspicious that the daughter is hiding something. She sends the daughter out to clean a coat, and she disguises as the daughter, and goes to the fish. She leads the fish out, she kills the fish, and she eats it. Shen Hsien gets back, and found that the fish has been killed. Then a man

from heaven with dishevelled hair, comes down and tells her what it is just happened. He says: "your mother has eaten the fish, and she has hidden the bones in a bucket. If you get the bones back, you can make a wish".

Shen Hsien found the bones, and wishes for pearls and riches. At a latter time, a fair comes to the village and they all go to it; Shen Hsien dressed up in nice clothes, so she cannot be discovered. But the stepmother's daughter get suspicious she is there, so she runs away. While Shen Hsien runs away, she loses her slipper. The slipper is found by the cave people, and they live near a big Kingdom. The king sees the slipper among the people. He sends out his soldiers to look for the owner of the slipper. He finds Shen Hsien, and she marries him. The stepmother, and the stepmother's biological daughter, are killed by stones from the sky. Shen Hsien and the King, they hide the fish bones so they can continue making wishes to give to the army. And then, the fish bones are washed away.

3a

There is a girl, and her dad was a king. He dies, and she was left with her stepmother. The stepmother was not nice and made her do tasks, like collecting water from far away places. While she was collecting water she saw this fish, and she kept feeding him, and the fish was growing, and then it got too big, so she brought her fish to a pond near her house. She kept feeding him and he kept becoming bigger. The fish only appears when the girl came. The stepmother wanted to get the fish, so she tricks the girl to give her, her coat, so she could pretend to be her, and she killed the fish. She then eats the fish and kept the bones.

Then a creature, a man, from the sky, came and told the girl that the stepmother killed the fish, and she had to get the bones. So she took the bones, and put them under her bed, and they were magical. So she got gold, pearls, and jewels.

Then there was a ball, and the girl went with nice clothes and fancy shoes. The stepmother's daughter recognises her, and she has to run away so she left her shoe. The prince got the shoe, and tortured his people for information to find the girl.

He found the girl and he asked her to marry him, and she was wearing blue dress. He wanted the bones, and he asked the bones for many things. He got pearls, and jewels, and gold, until there was nothing left.

He had the girl and her stepmother stoned to death. The bones of the fish went back where the fish was found and it was called "the pond of the regretful woman".

3a1

There is a girl, and her dad was a King, but then he dies. He left her with the stepmother. The stepmother makes her do dangerous things, like getting water from far away places. One time, she goes to get water and she finds a fish. She feeds the fish, and the fish keeps growing until it does not fit in the place where it was from. So she brings him back to the pond next to the house. Her stepmother found out, and tricks the girl into giving the stepmother her coat. So the fish will think the stepmother is the girl. She wore the coat, and caught the fish, because the fish only came out with the girl. So he came out, thinking it was the girl, she ate the fish, and kept the bones.

The girl then was calling for the fish, but the fish did not come. Then a random guy from the sky, came down, and told the girl that the stepmother killed the fish and had the bones. He said to find the bones and put them under her bed. She does that, and asks the bones for staff. It gave her pearls, and gold.

Then there is this festival, and since everybody is going, she goes as well and she wears fancy gold shoes. Then when she gets there, the stepmother's daughter recognises her, and she runs away, but she leaves her gold shoe.

Then the people at the party, gave the shoe to the Prince, and the Prince tortured the people to find who owns the shoe, and eventually he finds her. He asks her to marry him, and she says yes.

She brings the bones with her, and he asks the bones everything, until there is nothing left for the bones to give. He called for the stepmother and stepsister, and he killed them by throwing rocks to them.

He then brings the bones back to the pond where the fish came from, and he called it: the pond of the regretful women.

3b

There is a young girl called Shen Hsien, and her parents are dead, so she has to live with her stepmother and stepsister. One day, she finds a fish and looks after him, and she hides him from her stepmother and stepsister. He keeps growing bigger and bigger, so she has to put him in a pond. Her stepmother finds out about the fish, and she sends Shen Hsien away to wash her coat, and disguises herself like the Shen Hsien. She goes to feed the fish to the pond, the fish comes out and she kills and eats him, and she buries the bones.

Shen hsien comes back, and a man from the sky comes down, and tells her that her stepmother has killed the fish. And if she finds the bones she would be able to make wishes.

So she goes and finds the bones, and then she wishes for riches and pearls. Then there is a festival, and she wishes to be dressed up nicely and goes to the festival. Her stepmother and stepsister are there as well. Her stepsister recognises her so she has to flee, but she leaves behind the shoe. Then the king's people find the shoe, and he gets his people to go and look for the shoe's owner. Rocks fall from the sky and kill the stepmother and stepsister. Shen hsien and the king get married, they bury the bones so they can get more wishes, but the bones got washed away.

3b1

There is a girl called Shen Hsien, and she lives with the father, the stepmother and the stepmother's biological daughter. The father dies, and the daughter continues to live with the stepmother, and stepmother's daughter. The stepmother makes her collect gold and woods. One day, she is out and she finds a fish, and takes him back home. She keeps it in a basin, and does not tell anyone about it. As the fish keeps getting bigger and bigger, she moved it to another basin, until it is too big and it has to go in the pond. The stepmother gets suspicious that the girl hides something. So she gets her daughter to clean the coat of Shen Hsien, and the stepmother wears the coat and disguises herself as the girl, and finds the fish. She kills the fish and eats it.

Then Shen hsien comes back home and she finds that the fish has been killed. A man descends from heaven and says that the fish has been killed by the stepmother, but if she finds the bones, they will give out a wish that she wants.

So she finds the bones, and wishes for pearls and riches.

Then a fair comes to town and she goes to the fair, and she dresses nicely so she will not be recognised. The stepmother's daughter catches her. So Shen hsien runs away but she loses her slipper. The slipper is found by the cave people, and the king finds the slipper and try to find the person that owns the slipper. Shen hsien ends up marrying the king. The stepmother and her daughter are killed by rocks falling from the sky. Then Shen hsien marries the king, and they kept the bones hidden, and they kept making wishes they want. Eventually then the bones are washed away.

3b2

There is a girl called Shen Hsien, and she lives with her stepmother, her stepmother's biological daughter and her father. Her father dies and she discovered a fish. She gets the fish home, put in a basin, it gets too big, and it ends up in a pond. She keeps feeding him, and the stepmother gets suspicious there is something. So she disguises herself as Shen using the coat.

So when Shen goes away, the stepmother goes, sees the fish, leads it out, kills and eats it. Shen comes back and does not see the fish, so a man comes down from heaven with curly hair, and tells her what happened He tells that if she finds the bones, she can make a wish. She goes to find the bones in a jar, that her stepmother is keeping them in. She makes a wish to get a lot of pearls and riches.

Then in the land there is a fair, she goes to it, and she dressed up really nicely, with the clothes the bones got her. She goes to the fair but she is terrified that stepdaughter is going to find she is there. So while she is running away, she loses a slipper.

The slipper is found by some cave people who live next to a kingdom. The king finds those people with the shoe. He finds Shen and marries her.

They find the bones, make wishes on them to get to the army. The stepmother and the stepdaughters are killed by stones falling from the sky.

4a

Many years ago, a king has a daughter. The king died, and the daughter moves with her stepmother. But her stepmother is not very good. She says her to collect water from a far away place. Once she was collecting water, she found a fish, she kept feeding this fish; and the fish kept growing and growing. The fish becomes big, and the girl brings this fish to live with her, and when her stepmother noticed the fish she want to get it, she cheated the girl and took her coat, she wear the coat. The fish only appeared when he saw the girl, so her stepmother wears her coat. She finally kills the fish and keeps his bones.

A man from the sky told the girl that the fish was killed and that the girl has to get his bones. After she got them, she has to put the bones under her bed and magically she got gold and jewels.

There was a ball, and she went to it, wearing fancy clothes where she met a Prince. The other real daughter of the stepmother went to the ball and she recognises her. The girl had to run, but she left her shoe.

The prince told the people to find the girl with the shoe, and he found her and asked her to marry him. They got many goods things, with the bones. Finally her stepmother is dead.

4a1

There was a daughter who was the daughter of a king, and the king dies, and her stepmother was not very nice to her, and sent her to do dangerous tasks. One of the tasks was her to go to a far away river and get some water. And while she is doing it, she finds a fish. She feeds the fish, until he gets too big, and she took it where she is from. The fish comes up only when the girl is there. The stepmother finds out this fish and decides to try to trick the fish by taking the girl's coat, and pretending to be her. There was the fish out of the river, and the mother gets the fish, eats it, and keeps the bones. When the girls comes to the river to see the fish, nothing comes, and then some random guy comes from the sky and says she needs to find the bones of that fish and put under her bed. She does this, and the bones give her a lot of staff, like gold and pearls.

Then there is a party after this, where the girl goes to because everybody is going. She meets the prince there, but she leaves the gold shoe behind. The prince tries to find her, and ends up asking things to the bones until there is nothing left to ask. He calls for the stepmother and her daughter and ends up torturing and killing them. He returns the bones of the fish to his original river and calls it: "The river of the regretful women".

4b

There is a girl called Shen Hsien, she lost both her parents and she is living with her stepmother and stepsister. One day she finds a fish and takes it with her. She hides it not to show it to her stepmother and stepsister. She feeds him a lot, and so this fish grows bigger and bigger, so she has to take him into a pond. Then her stepmother finds the fish and gets really angry, and sends Shen Hsien away to wash her coat. She disguises herself as the girl, goes to feed the fish, and when the fish comes out to eat, she kills it and keeps the bones.

When Shen Hsien comes back, a man comes from the sky and tells her that her mum has killed the fish, and eaten it. The man tells the girl that if she finds the bones, she can ask wishes through them. So Shen Hsien goes and looks for the bones, and finds them. She wishes for pearls and riches. There is a festival coming up, and she wishes for a dress. There are also her stepmother and stepsisters at the festival, and they recognise her. So she runs away, and she loses her shoe. so the king goes and finds the shoes, and sends his men to find the owner of the shoe. When they found them, rocks fall from the sky and kill both the stepmother and the stepsister. Then Shen Hsien and the king got married.

4b1

It's the story of a girl called Shen shun. She first lives with her father and her stepmother, and the daughter of her stepmother. But then the father dies, so her stepmother is very mean with her and makes her do things, all the chores. One day, Shen shun finds a fish and keeps it without telling anyone. But eventually the fish keeps getting bigger and bigger, so she has to move the fish from place to place. Finally the stepmother doubts something, she thinks Shen Shun is hiding something from her. She asked Shen shun to clean someone's coat, so Shen Shun will be in another place. The stepmother takes Shen Shun's coat, she wore it, and she goes to find the fish. She kills the fish and eats it. When Shen shun comes back she finds that the fish are dead. Then an angel comes from the sky, and he tells her, that if she ever finds the bones there will grant her every wish that she would like. She finds the bones and wishes for pearls and richness. The day of the fair, she goes to the fair nicely dressed that she would not be recognised, but eventually the daughter of the stepmother catches her, so she runs away. She loses her slipper. Then the Prince finds the slipper, and he finds Shen shun and marry her. Then the stepmother and daughter are killed by raining rocks. The king and shen shun keeps the bones so they can continue to make wishes, but then the fish bones are washed away.

4b2

There is a girl called Shen Hsien, and she has a fish. She keeps the fish in a basin and she feeds it but it gets too big. She takes the fish outside and she put the fish in a pond. It kept much bigger, but she lives in the house with her stepmother, her father, and her stepmother's biological daughter. The stepmother is suspicious on what Shen Hsien is doing. She goes and finds the fish. When Shen Hsien goes away, the stepmother pretends to be Shen Hsien by using her coat and goes and takes the fish out of the pond, and kills and eats it. When Shen Hsien comes back, she discovers the fish is gone, and a man with curly hair comes and tells what happened, that her mother has killed the fish, if she can find the bones, then she would be rich. So she finds the bones in a jar, and she somehow becomes rich and buys clothes. Then she goes to a fair, and she meets some people there who they live in a kingdom. She meets a king, and the king falls in love with Shen Hsien. Her mother and stepdaughter end up being killed by falling rocks.

Shen Hsien live happily ever after.

SHEN HSIEN SECOND GENERATION

1a

There was a man who married two women, the first woman died, leaving to him a daughter named Shen Hsien. The father loved the daughter very much.

 She was very good in sifting gold. When he died, the remaining wife treated Shen Hsien, very poorly. She made her go in digging in danger wells, with deep water.

During one of this time, Shen Hsien found a fish, with red fins and gold eyes, which more than two inches long, so she kept the fish. She put it in a basin, that she fills with water. But then the fish, kept growing. So eventually, she put it in a pond, behind their house. She fed it with scraps of food. The fish only came out when Shen Hsien came to feed it, and he used the bank as pillow. The stepmother knew this, but the fish would not come out whenever she called the fish. So she sent her daughter to dig water hundreds of miles away. And asks if she is tired, and wants her coat clean. The stepmother takes the coat, and wears the coat, and she calls the fish. But she has a dagger in her sleeve, so she kills the fish, and eats it. The stepmother then hid the bones in a dung hill.

Shen Hsien returned to feed the fish, but the fish does not come. So she start crying. Then, a man in dishevelled hair, and rough clothes, comes from heaven, and tell Shen Hsien, not to worry because the stepmother has killed the fish, and hid

the bones in a dung hip. She should go and collect the bones and hide them in her bedroom. Whatever she prays to the fish bones, what she wants will be granted her.

So she does it, and she prays to the fish bones and gets pearls, dresses and jewels.

One day, the stepmother goes to a festival, with another her daughter. Shen Hsien waits until they go, and then she dresses herself in bluish clothes, and goes there as well. When she is there, she is almost recognised by her stepsister and stepmother, and she rushes off. In the process of rushing off, she loses one of her shoes, that heads up with the cave men.

The cave men live, not far away, from another warrior town. The cave men gave the shoe to neighbourly warrior kingdom. The king wants to find out to whom it belongs to. He tries on everybody's feet, but the shoe is to small. He tries on all the ladies' feet, and it is too small. So he imprisoned and tortured the cave men, but he finds no more information. So he starts trying the shoe on every households in the nation. And he comes across the match of the pair of the shoe, in Shen Hsien's house. The shoe is important because it is very light, as feathers, and when you walk with it on stones, it does not make any noise.

After that, Shen Hsien dressed herself with bluish clothes, and with the other shoes, she goes to the king. They married. The stepmother and stepsister are killed by flying stones, and put inside the cave, which becomes: "The cave of Regretful women". And anybody who praised the cave, about marriage, has their wishes granted.

Back on the kingdom, the king wishes on the fish bones so much, for so many things, an unending list of pearls, gold, and treasure, that the fish bones stopped working. So he buried them on the shore, with bushels of pearls, and underneath gold parapet. He left it there, for a year. After that he goes back to retrieve them, because he wants to distribute them among his army. But the bones and everything have been washed away by the ocean.

1b

The king of the cave people, has a daughter called Shen Hsien. When the king died, Shen Hsien's stepmother, treated her very badly. She made her chopped down a lots of wood, and draw water.

One day, when she was drawing water, she caught a little fish, two inches long, with red fins, and golden eyes. She put it in a basin, and fed it with food scraps. As it got bigger and bigger, it was too big for the basin, so she put it into a pond, back of the house. When she went to the pond, the fish would come, using the bank as a pillow. But the fish would not come for anybody else, only for the girl. Her stepmother knew this, and she went to the pond. But the fish did not come. So one day, she tried to cheat the girl, and said:" You look tired, let me wash your coat".

She sent her to collect water from a spring, hundred miles away, and put on the daughter's coat, and hid in the sleeve, a sharp sword. And she went to the bank of the pond, and called the fish, and the fish came. She caught it and killed it.

She cooked it and ate its flesh, which was twice as lovely as another fish' s flesh. She hid the bones under a dung hill.

When the daughter went to the pond, and called the fish, he did not come, and she did not know what to do. But then a man, with dishevelled hair, and rough clothes, came down from the heaven, and said: "Your mother has killed the fish, and hid the bones under the dung hill, but you get the bones, and take them to your room, and then you can make wishes, and they will be granted".

Before the father died, Shen Hsien, was very good at getting gold and pearls. She took the bones to her home, and wished on the bones, and her wished were granted, and she got pearls, jewels, clothes, and food.

One day, the cave people were holding a festival, and the stepmother said, you stayed in the courtyard and watch the fruits. But when she found her mother had gone far away, she dressed herself in bluish clothes, and fine gold shoes, and followed her mother to the festival. And the gold shoes were so fine, they made no sound, when you walked on stones. She got to the festival, and the stepmother's other daughter saw her, and thought she looked familiar. And she said to her mother: "I think she is my sister".

Shen Hsien, thinking she has been recognised, went straight back home. But while she was going home, she lost one of her shoes.

This shoe was found by one of the cave man, and sold to the king of the kingdom of T'o Huing, which was near an island, with 30 islands. The king of T'o Huing, wanted to know from where the shoe had came from, and tortured the cave man, but he could not tell. He tried with all his men, but it was to small to fit them. He tried with all the women of T'o Huing, but did not fit them. So he made a search of the cave people, they search all the houses, and found the shoe in Sheh Hsien house. Later, they searched the house ad found Shen hsien. The king took Shen Hsien for his first wife, and she was dressed in bluish clothes. Her stepmother and sister, were killed by throwing stones. And, they were buried in, what it was called, the pit of the regretful women. And this was a place where the cave people could pray to have their marriage wishes settled.

When the king found out about the fish bones, he used them very greedily, to ask for one hundred bushel of gold and pearls. The fish's bones wishes stopped to be answer because of his greedy. So the king took the fish bones to the coast, and build there a castle, with a hundred bushes of pearls again and gold parapet, all around it. And when there was a rebellion, among the soldiers, he was going to distribute the pearls among them, but the tide came and washed the castle away.

2a

There was a man, he had two wives, and one of the daughters of one of his wifes, was called Shen Hsien. The other wife, her stepmum, did not really like her. But Shen Hsien, was really good at shifting gold from rivers. After her husband died, Shen Hsien's stepmother, she sent her away, always for sifting gold.

One day, she was sifting gold in the river, and there was a fish, that appears to her, a fish with red fins, and golden eyes. He said that if she prayed, he will grant wishes. She took the fish, and first, she took the fish into a basin, behind her house. She feeds the fish with food scraps, but the fish kept growing and growing. So she put it in a pond, behind her house.

The stepmother has a coat, a blue coat, and she sent Shen Hsien away, hundreds of miles away, to sift gold from the river. She takes the dagger from her sleeve, and kills the fish.

When Shen Hsien comes back, she goes to the fish, and the fish would only appeared to her, so the fish did not come back. Then an old man, with rubbish clothes, appeared from the heaven, and said, your stepmother has killed the fish. You must find the bones, and if you pray to the bones, the fish will grant you wish. So she finds the bones, and she takes them up, to the attic, and she prays the bones, and the praying grants her all her wishes. So she gets pearls and treasure. The stepmum, who has also another daughter, Shen Hsien's stepsister, goes to a festival. Shen Hsien follows them in secret, and she almost gets recognised, but not quite. She loses her shoe, and the shoe is picked up by cave men.

Then the cave men bring the shoe to the king of a nearby warrior kingdom. The shoe is very special, because it is very light; if you walk on stones, it does not make a sound.

So, this king is determined to find out, who the owner of the shoe is. He fits the shoe to all the women in the land, but it does not fit. He tries to go to every household, to fit the shoe, but it does not fit anyone. One day, it gets to Shen Hsien, and the shoe fits. So he marries Shen Hsien, and takes the bones of the fish. He prays the bones of the fish. But he prays so much, getting all this treasure, all these pearls. He prays so much, that the bones stop working. So he buries the bones at sea, and comes back a year later. The bones have been already washed away, and he cannot find them.

Shen Hsien's stepmum and stepsister, were killed, and flooded by rocks, and they end up in a cave, which is called: "The cave of mothers". If you pray to the cave, concerning marriage, your wish will be granted.

2b

There was a girl Shen Hsien, and her father was the king of the cave people. One day the king died and she was left with the stepmother. She was very mean and made Shen Hsien chop woods and fetch water. When she was fetching water, she found a fish, a red and gold fish. She took him back and fed him scraps; and he grew really big. The fish will only visit

her, but her stepmother found out about the fish, and she wanted the fish to visit her, but he would not. So one day, she told the girl to go to fetch water to somewhere really far away. She took the girl's coat, she hid a sword beneath it, and she killed the fish. She ate the fish and hid the bones somewhere.

The girl went to look for the fish but he would not come, so a man with dishevelled hair, came and told Shen Hsien where the bones were, and if she took them and she would get wishes from them.

She wishes for food and clothes. One day there was a festival and the stepmum said she could not go, so Shen Hsien waited until she was already gone, and dressed herself in blue dress and gold slippers. She went to the festival but she went recognised by her stepsister, and run home and lost one of the slippers. A cave man found the slipper and sold the shoe to a king of an island with thirty islands. The king wanted to know from where the slipper came from, so he tortured the cave men to tell him. He tried the slipper on every men and women on his kingdom, but it did not fit. He finally found the girl in blue dress and it finally fit her. So they got married. They stone the stepmother and daughter to death and put them in a pit of bones. He found about the bones property and he wishes for a ton of pearls, and he built a castle out of pearls because he was very greedy, and when there was a rebellion he was giving pearls to his men. But the pearls went washed away.

2b1

There was this king, he had a daughter. She was called Shen Hsien. The king dies, and Shen Hsien's stepmother was really mean to her, made her do all kind of chores, like collecting water.

One day, Shen Hsien was collecting water from a spring, and she found a little fish, with red eyes. She brought him back home, and start raising him and feeding him. She hid it from her mother, because she did not want her to find out. This fish gradually got too big, so she put in a pond nearby. She used to go and feed it, unrealised by her mum. The fish used to come out of the bank, using it as a pillow, and the fish would only come out for Shen Hsien. The mother found out about it.

One day, the stepmother was not so happy about it, so she sent Shen Hsien to a spring, hundred miles away. She said Shen Hsien that her coat needed washing. She decides to disguise herself in Shen Hsien's coat, but have a sword in one of her sleeves. She went down and the fish came out for her, and she killed it and she ate it. It was as delicious as some other kind of fish.

She hid the bones under a dung hip. Shen Hsien came home, and found that the fish was gone, and she was very upset. Then some guy came down from heaven, with dishevelled hair, and said to her: your stepmother killed the fish, but you can find it under the dung hip. You can use the bones of the fish, if you take them, put them under a pillow, and use them to make a lot of wishes, and get whatever you want.

Shen Hsien, who was good in collecting pearls, she used this fish bones to get pearls, clothes, and shoes.

One day, the cave people had a festival going on, and the stepmother wanted to go along to this thing. She left Shen Hsien home, and she got off to this festival. Shen Hsien decided to go and follow her. She puts on a blue dress and gold shoes. These gold shoes do not make any sound when walking on the stones. Shen Hsien was quite quiet.

She got to the festival. The stepmother's other daughter thought that she might recognise her and said to her mother: "I think that it might be my sister".

So Shen hsien is brought home, but accidentally, she left one of her gold shoes around.

One of the cave people find he shoes, and sells to the king of To-Healing. The kingdom is an island with 30 islands. The king is wondering where or not gold shoe, is coming from. So he tortured one of the cave men, but he does not find the answer there. He interrogates all the cave people, but cannot find the owner of the shoe. Eventually he sent a huge search body around looking for every houses. Eventually, they managed to find the other gold shoe at stepmother's house. They found also Shen Hsien.

The king of To-healing, takes Shen Hsien to be her first wife, and he kills the stepmother and daughter. He buries them in a place called "the pit of the regretful women", which is supposed to help all men to get their marriage wishes.

The king catches wind of the fish bones, but he is very greedy, he starts wanting to get lots and lots of pearls, and riches. He builds a castle near the sea, using pearls and riches. His intention was, during a rebellion, to give all these pearls out to his fellow rebels. But the tide came and washed the entire fortress away.

3a

There is a man who has two wives, and he has a daughter from both. One of them is Shen Hsien, and she is very good at panning gold from rivers. One day, the father dies and the girl's stepmother sends her away to pan out for gold. At some point, she meets a fish, that she keeps in the house. She feeds him with food scraps and he keeps growing. So she put him in the pond.

Around that time, the stepmother sends her, hundreds of miles away, to get gold from somewhere else, and she kills the fish using a dagger. Shen Hsien comes back and cannot find the fish. And, a person with rubbish clothes comes down from heaven, to tell her that the stepmother has killed the fish, but if she finds the bones, she can still pray at them. She goes out and she finds the bones, she prays them, and she gets nice clothes. She follows her stepmother and stepsister to a festival, where she meets the prince, and leaves her shoe. The king goes all around the land to try to find her. He does and they got married.

She tells him about her magical bones, and he wishes a lot on the magical bones, and they stop working. He buried them at the sea, and when he goes back to find them, he cannot find anymore. The stepmother and the stepdaughter die through a flood of rocks coming through.

3a1

There was a man who once married a woman, but he later remarried. He had a daughter called Shen Hsien, and she was hated by her stepmother, although she had special gifts as finding gold in the river. One day, when she was looking for gold, she found a fish that could talk to her. The fish has red fins and golden eyes. The fish said to her that if she prayed to it, she could have wishes granted. So she took the fish back home, kept it in a basin, and fed him until he grew larger. Then she moved him to a pond. When she prayed to the fish, she asks for jewels and pearls. However, her stepmother found the fish and killed the fish in secret.

The stepmother then took her own daughter to a festival. Shen Hsien, dressed up in her new beautiful clothes, went to the party as well, and she was nearly recognised. Before she left the party, she lost the shoes at the festival.

At this festival, there was a King from a warrior land, and he found the shoe. Ever since, he tried to match it to someone, to find to whom it belongs to. However, none of the women in the land could fit in the shoe. It was a special shoe that could grant unsound walking. Eventually, he found the girl. In the meantime, the girl was told by a beggar that the stepmother had killed the fish, and that she could find its bones. When the king met her, he found the bones as well, and prayed to them. But he abused of the magical powers of the bones, so it went off. He buried the bones at the sea and they got washed away.

3b

There was a girl called Shen Hsien, and her father was the king of the cave men. Her father died, and she was left with the stepmother who was mean with her. She got her chops rocks and collect water. Then one day, she found a fish, which was red and gold, and she fed the fish with scraps from the house; the fish grew big. The stepmother found out about the fish, and when Shen Hsien was away, the stepmother waited for the fish; she put a sword under her coat; and when the fish appeared she killed the fish, and burned the bones.

Later Shen Hsien met a dishevelled man who said the bones had magic properties. Then there was a festival, and the stepmother could not go, so Shen Hsien went to the festival dressed in a blue and gold dress. While she was the festival, she lost her slipper.

The sister saw her to the festival and told the stepmother. The stepmother was angry. The slipper was found by one of the cave men at the festival; and he sold to the king of thirty islands. The king really wanted to know where the slipper came from. He tried the slipper on all his people in his kingdom, but did not fit anyone. So, he tortured the cave man. He eventually wondered around, and found to whom the slipper belongs to, and it was Shen Hsien. They got married. The stepmother was stoned to death, as it was the sister. They were buried in a pit of bones. The king came to understand that the bones had magical properties, linked with the fish. He could use to asks pearls. The king was greedy, he used this pearls to pay his army.

3b1

There was a girl called Shen Hsien, her mother died, so she got a stepmother and a stepsister. They made her do a lot of cleaning. One day, she went out the river, and made friend with a fish with red eyes. They became friends, and she would go out everyday using the bank as pillow, and the fish would come out to say hello to her. One day the mother realises what it was going on, and she said to Shen Hsien to go away to a very far mountain, to a spring for some water. She said to Shen Hsien to leave her coat behind for some washing. Then the stepmother went to the riverbank with her coat, disguised as Shen Hsien, and the fish came out. She catches the fish and eats it. It tastes good as any other fish.

When shen hsien comes back, she tries to go to the river everyday, she was sad because the fish was not there. Then one day, one of the cave people told her that the fish has been eaten, and that she can go under the dung hip and found the bones. She could then put them under her bed to make a wish. She then wishes for pearls, jewels.

One day, the cave people had a party, and she has to stay home. Her stepmother and sister went out, but she follows her in secret, with a blue dress and golden shoes that does not make a sound. She gets there, but the stepsister recognises her and said "that girl looks like Shen Hsien". So they take her back home, but she leaves a gold shoe behind. The king wants to find her, and the golden shoes goes around across the different islands. He then interrogates and tortures people and the cave men until they eventually get to Shen Hsien's house and found her. He wants to marry her. He puts the stepmother and sister to the "Pit of the regretful women" where women whose men want to be happy with the wife, send such a woman to.

He then starts to make wishes too like Shen Hsien does, and he got a lot of pearls and jewels, and keeps most for himself in the castle, so he can pay back who is at his side in case of rebellion. But, the sea comes and washes all the pearls away.

3b2

There was a king who was very rich, and he had a second wife. When he died, she was taking care of his daughter. But she was mean to her, made her do chores, like collecting water. When the daughter was collecting water, she found a fish, who had red eyes. She took the fish home, and she did not want the stepmother to find out the fish. She was hiding him from her. When the fish got too big to keep him home, she took it to some other place. She would visit him everyday, and he would come out only with her. When the stepmother realised what it was happening, she sent her daughter away, and took her coat to pretend she was the daughter. The fish came out to say hello, but the stepmother had a sword under her sleeve, and she killed it, and ate it, and it was delicious. She hid the bones.

When the daughter came back, and she realised the fish was not there, she was really sad. Then a guy came and said that the fish was dead, but that she could find the bones. If she took the bones, and put them under her pillow, she could ask for many wishes. She then collected the bones, and asked for pearls and gold.

Then there was this festival organised by cave people, and her stepmother wanted to go, but she did not take the daughter. So the daughter follows her stepmother, wearing a blue dress and gold shoes that would not make any sound when she was walking on stones. So she was very quiet when she arrives at the party.

Her stepsister was there at the party, and she recognises her and told her mother that her stepsister was there. So they took her back home, because she was not supposed to go to the party. And she left her shoe.

The king saw the shoe and was wondering to whom it belongs to. So he start asking people, and even tortured the cave people to know who was the owner of the shoe, but no one knew. They found then the second shoe at the stepmother's house, and they found out it belongs to the girl, and the king marries her, make her the first wife.

Somehow, he discovered how to use the fish bones, to ask for wishes, but he was too greedy, and started asking for many pearls and treasures. And he builds a sort of fortress, a palace, and starts giving pearls to the rebels who work for him. But then a big wave came and wash the castle away.

4a

Once upon a time, there was a girl who has two mother, stepmother and real mother. Her name was Shen Hsien. One day her father died, and she was left with her stepmother who sent her to pan for gold. She went out panning for gold and she found a fish, and she met the fish, and she brought it back with her to her house, where she fed the fish. She scraps some food until it grew bigger and bigger, and she put it in a pond.

The stepmother sent her away again to pan for gold elsewhere, and while she was panning for gold, the stepmother killed the fish with a dagger. Someone with rubbish clothes, came down from heaven and says to Shen hsien that the stepmother had done this. But she could find the bones and prayed at the bones, and something good will happen. She found the bones, she prayed at them, and she got lovely clothes. Then she went with her stepmother to a festival, and she met a handsome king but she forgot her shoe. The prince went looking for her, and he found her and they got married. She told him about the magic bones, about the prayer, and he tried to look for the bones that were buried at the sea, but he could not find them. The stepmother was killed by rocks fall on her.

4a1

There were once a man and a woman that they were married, but then he remarried and the new stepmother did not like his daughter, Shen Hsien, even though she has special skills like finding gold from river. One day shen hsien went to the river met a talking fish, that had red fins and golden eyes. The fish said to her that if she prayed to him, he could grant her wishes. Shen hsien took it back, put in a basin, and fed it until it grew bigger. When it grew bigger, she put it into the pond. She prayed for it and she asked for jewels and pearls. She did not know that the stepmother found the fish and killed it secretly.

Then there was a festival, to where the stepmother took her daughter. Shen Hsien also came to the festival, and she was dressed in gold and pearls. Then since she was almost recognised, she ran away and lost her shoe. At the festival, there was also a king from a warrior land. He found the shoe and wanted to find the woman to whom the shoe belonged. It did not fit any of the women of the land, because it was a special shoe.

Eventually he found to who the shoe belongs to. In the meanwhile, a beggar told Shen Hsien that the fish has been killed, and told her to find the bones. So when the king married Shen Hsien, he also got the bones and he prayed to the bones, but he abused to the power of the bones, and they went away. He buried them and they got washed away.

4b

The story is about a little girl called Shen Hsien, and her father was a king of the cave men. He died and so she was left with her stepmother who was not very fond of her.

One day Shen Hsien took some stones and went to collect some water from the river where she found a fish who was red and gold in colour. She liked the fish and start feeding him with food scraps from the house. One day when Shen Hsien wasn't there, the stepmother found out about this fish, and she decided to go there and kill him with a sword she was hiding under her coat.

There is a festival in town, and the stepmother could not go, so Shen Hsien went to it and she did not say to her mother. Her sister saw Shen Hsien over there, and told the stepmother who got really angry. During this time at the festival, Shen Hsien had a slipper on which she lost. It was found by one of the cave men, who sold it to the king of the thirty islands.

The king really wanted to know to who the slipper belonged to, so he tried to get all the women and all the people of the area to try the shoe, but it did not fit anyone. He tortured the cave men to find out who the owner was. When he found Shen Hsien and knew it was her, he married her.

The evil stepmother did not like that and she was stoned to death. Before Shen Hsien met a dishevelled man who told her the bones of the fish were magical. The king discovered it after marrying Shen Hsien, and he was greedy, so he sold the bones of the fish to buy and gems and pays his army.

4b1

There was a girl called Shen Hsien, her mum died and she was sad. She got a stepsister, and a stepmum. She made friend with a fish who has red eyes. She went to see him everyday, and the stepmother found out she was going to see that fish, she sent her far away on a mountain to collect water. She said to her to leave her coat behind for washing, then the mother wore the coat and the fish went out because he thought it was Shen Hsien. Then she caught the fish and ate it, and tasted good as any other fish. When Shen Hsien came back and she kept going to the river everyday, and she was sad because the fish would never come out. Then a man came and told her that her mum ate it and that she should go to get the bones of the fish, and buried underneath her bed. She could make wish and she wishes for jewels and pearls. There was a party of the cave men, and the mother and sister went, and she was not meant to go, but then she wore a blue dress and golden shoes that do not make a sound. The stepsister recognises her and she disappears but she left a golden shoe behind. The prince who tried to find her, and rustles among the cave men when eventually find out where Shen Hsien was. He wanted to marry her. He brought the stepmother and sister in some regretful women place, so he could be with her. He also made a lot of wishes, asking jewels and pearls. He kept in his castle so he could give to people to try to stop rebellion. Then the sea washed them away.

4b2

There was a king and he got a second wife, and she has a stepdaughter and she made her do chores, collecting water. And one day, while she was out collecting water, she found a fish that had red eyes. She quite liked the fish but she had to hide form her stepmother. She went to see the fish, nurtured him, and it grew. The stepmother found out and she disguised herself like the stepdaughter, and went to the fish and eats it.

She hid the bones, and the stepdaughter went and realised that the fish was not there, and some guy told her, that the bones could be used to grant wishes. She brought the bones and put them under her pillow, wished for pearls and gold. The stepmother wanted to go to a party, and it was held by cave men, and the daughter wanted to go too, but was not invited. So she went with some shoes which help her to walk quietly on the stones. When she was at the party, the stepsister recognised her, and her mother and stepsister took her back home. She left a shoe to the party, and the king was looking for where the other shoe was to find out who the person was. They found the house of the stepmother. He married the girl. He used the bones of the fish to make wishes like pearls and gold. But he overused the bones, (he interrogated the cave men to know where the shoes was) and the castle ended up being destroying by a wave.

CAT CINDERELLA ORIGINAL TALE

There once lived a widowed Prince, who had a beautiful daughter, named Zezolla, whom he loved endlessly. However, after a time, with the father married again a wicked wife, who treated Zezolla really bad. The daughter, who was frighten by her evil stepmother, complains to her governess about it, and so the governess, Carmosina, said:"Follow my advice, and you shall have me for your mother; and I will love you as tire apple of my eye".

She then suggested Zezolla, to go to her stepmother and ask for an old dress out of a chest. The stepmother, who would be happy to see Zezolla wearing old clothes, went to search for an old gown in the chest, asking Zezolla to hold the lid up. Zezolla, while the stepmother was searching into the chest, left the lid down and decapitated the stepmother.

After that, she convinced the father to marry the governess Carmosina. During the wedding, while Zezolla was standing on a balcony, a dove came and said: "If ever you want anything, only let the fairy dove, on the island of Sardinia know, and your wish will become true."

For five or six days, the heroine was well treated by her new stepmother Carmosina, but then, she introduced her hidden six daughters. They usurped the place of the heroine, who was sent to the kitchen and becomes "Cat Cinderella".

Not long after the marriage, the Prince went to Sardinia, the land of the fairies, and asks each of his daughters, what they would like him, to bring back for them. Each of them asks for material objects, but Cat Cinderella, asks for nothing, but to tell to the dove of fairies, to bring her something, and said if the father forgets, he will not be able to move from the harbour. The father bought all gifts for the stepdaughters, but forgets about Cat Cinderella, so the ship won't move. The captain, who is told in a dream that the father broke the promise to Zezolla, said to him to remedy of it. The father goes to the cave of fairies to ask for something for his daughter. The fairy is pleased and say to thank Zezolla for remembering her, an gives out, a date tree, a hoe, and a bucket full of gold and a silver napkin. The hoe is for hoe the tree, and the bucket, to give it water.

The Prince returns home and gave the gifts to stepdaughters, and Cat Cinderella who, full of joy, plants the date tree. She takes care of it, whipping its leaves with the silver napkin. After days, it has grown tall as a woman, and a fairy appears out of it. She asks Cat Cinderella what she wishes for, and she replies she wishes to go out of the house, sometimes, without asking for stepsisters' permission.

When the time of the feast comes, Cinderella wishes to go. Like magic, the tree gives her a beautiful dress, and she goes to the ball. The King arrives and after seeing the beauty of Cat Cinderella, he is amazed, and asks a servant to discover whom that creature is, and where she lives. The servant follows her, but Cat Cinderella throws crown-pieces and he stops to pick them up. After that, Cat Cinderella, went home and undressed, as the date tree told her.

At the second ball, Cat Cinderella, goes to the date tree again, and this time she gets into a couch drove by six horses and damsels. Again the King is amazed by her, and before going away, Cat Cinderella throws pearls and jewels, to distract the servant who is following her. This happens again the third time, when she receives from the tree a coach of gold, with many servants, and she looks like a queen. At the end of the ball, the servant follows the golden coach, but Cat Cinderella, orders it to go faster and loses a slipper. The servant takes the slipper to the King, who suggests holding a banquet, and inviting all the women to try it on. However, none of the women's feet fit. He announces that everyone must return the next day and not a single woman is to be left at home. The Prince mentions Cat Cinderella, and the King encourages him to bring her along. When the King sees Cat Cinderella, he recognises her, but says nothing. When it comes to the slipper test, the shoe fit Zezolla's foot and King marries her. The stepsisters, full of envy and anger, went home to her mother saying: "He is the madman who resists the stars".

CAT CINDERELLA FIRST GENERATION

1a

The prince has a daughter, called Zezolla. The Prince decides to marry a new person, but Zezolla did not like the new stepmother. She talks to the governess, called Carmosita, and the governess plot to help her to get rid of the stepmother. Zezolla, asked to the stepmother if she could have an old dress from a chest. The stepmother said yes, because she wanted her to wear old dresses. One day, the stepmother went to get the dress out from the chest, and Zezolla closed the lid on her, and decapitated her. So she was gone.

Zezolla wanted the governess to marry the father, and she married him. All was good for a while.

Then, a dove came on her balcony, and told her that there was a fairyland in Sardinia, and that she could get something from them. Shortly after the marriage, the governess revealed that she has six children, and they all get in. The stepmother and the children, start treating Zezolla badly. She has to do chores in the kitchen, like cleaning, and she becomes Cat Cinderella.

The father decides to go to fairyland in Sardinia, and all his new daughters what they wanted. And all his daughters wanted material things, except Cat Cinderella, who asked the father to tell the fairies to bring her something that was not a material thing.

He forgot to talk to them, but he got the material things, so when he was going back, the ship would not leave the port. The captain had a dream of how the father did not keep his promise. So the father ended up going back to the cave of the fairies, and asking something for Cat Cinderella.

They ended up giving him: a tree, a bucket, and a hoe. He came back, and gave the gifts to the daughters, and the tree and everything to Cat Cinderella. She planted the tree, watered it with the bucket. She wiped the silver leaves, and the tree grew up as tall as a woman. And a fairy came out of it, and asks her what she wanted to be granted.

She said that she wanted to be able to go out of the house, without her stepmother's knowing and stopping her. And it was granted.

There was a ball that the king was putting on, and all the ladies in the land went to the ball. Cat Cinderella went to the ball as well. The tree made her a pretty dress, and she wore it. She went to the ball, and the King fell in love with her, because she was beautiful. When she was leaving the King sent a servant to track her, but she dropped coins to distract him, and he lost her.

So the King ended up holding a banquet to find out who the lady was, and she went with a golden coach. Again, the servant tried to follow her, but she threw pearls and jewels.

At the third ball, she went again, but while she was leaving, the servant got too much closed to her, and so she asked the carriage to go faster, and she lost a slipper.

The servant found the slipper and brought it to the king. The king invites all the women to try on the shoe, and when Cat Cinderella came, he recognised her, but said nothing. When she tries on the shoe, it fits and they got married.

The stepsisters being envious went home to her mother, the governess, and said: the king is mad, he does not watch at the stars.

1b

There was a Prince, who had a daughter called Zollo, he remarries, but she treats the daughter really badly. So the daughter tells that to her governess, that her stepmother treats her really badly, and the governess comes up with a plan, tells her what to do. So the daughter went to her stepmother, and she said, she wants an old dress from the chest. The stepmother likes that, because she likes the daughter wearing old clothes. So they go to the chest, the daughter holds up the lid of the chest, while the stepmother is searching for a dress. She drops the lid, and decapitates the stepmother.

The Prince marries the governess, and at the weeding, while she is standing on the balcony, a dove of the fairies comes, and said: if she ever wanted something, she should go to the island of fairies, in Sardinia, and asks for whatever she wants.

For five, six days, after the marriage, she got treated well by the governess, but then she revealed, she had six secret daughters. They come to the house and usurp the place of her, and she gets put in the kitchen, and she is called: cat Cinderella.

At some point, The prince, her father, needs to go to Sardinia, the land of the fairies, and asks all his daughters, if they want something. So all the six stepsisters ask for material things, but Cat Cinderella asks him to go to the dove of fairies, and asks her to give her something. She said, that if the father does not remember, he will no be able to come back, the ship will not move. So the prince went to the island, and gets all the staff for his stepdaughters, but forgets to get something for her, Cat Cinderella. So the ship does not move, and the captain, in a dream, gets told, that it is because, he

forgot to get something to her. So he tells the father to remedy to it. So the father, goes to the cave of fairies, and the fairies gives him a date tree, a bucket of gold, and a silver napkin. He took all this things home, and gives to Cat Cinderella. She plants the date tree at home, and gives him water with the bucket, and brushes his leaves with the silver napkins. The tree grows really tall, as the size of a woman, and a fairies appears out of it, and asks her what she wants. She replies it would be nice, sometimes, to leave the house without having to ask to her stepsisters.

So there was a feast coming up, and she asks the fairy if she can go out, and magically, she gets a really nice new dress, and she goes to the ball. The king sees her, and he thinks she is really beautiful, and tells his servant to follow her, to see where she lives, and who she is. But on the way home, she throws coins on the road, so the servant stops to pick them up, and does not find out who she is. There is a second ball, and she asks the date tree to go out again, and she gets a nice carriage, with six horses and six damsels. They go to the ball, and king sees her again and asks his servant to follow her again. But on the way home, she throws jewels and pearls, and the servant picked them up.

So there is a third ball, she goes again, she gets a golden coach, to go there. When the servant follows her, while she is going home, she asks the coach to go quicker, but she loses a slipper, which the servant picks up, and goes back to the King.

The king organises a big banquet, and invites all the girls in the kingdom, to find out who the girl was. But, nobody fits the slipper, so she is not there. The prince tells him about cat Cinderella, who was not there, and he says that at the next ball, all the girls should go, so tells the Prince to bring her. When she is brought, the king recognised her, but he said anything. At the slipper test, she fits the slipper, and he marries her. The six stepsisters go home, and they are all over angry.

2a

There is a prince, and he has a daughter called Zezolla, who is a princess. The prince wants to get married again, but Zezolla does not like the woman he does marry, the stepmother. So, she makes a plan with Carmosita, who is a governess, and they trick the stepmother. Zezolla does so by asking the stepmother, for an old dress which is in a box. So when the stepmother goes to get the dress from the box, Zezolla closes the box and chop off the head of the stepmother.

The governess marries the Prince, because it was what the princess wants. Then a dove comes and tells them that there is a magical land in Sardinia.

The governess announces she has six other daughters, who come to live with the Prince and Zezolla. They treat Zezolla very badly, and make her do chores in the kitchen. She becomes Cat Cinderella.

While this is happening, the Prince goes to Sardinia, and daughters ask him to get material things except Cat Cinderella, who asks for immaterial things.

He goes there, he got things for the six daughters but not for Zezolla. Then, when he is on the ship to go home, the captain has a dream. In his dreams, he sees that the Prince has not kept his promise.

He refuses to leave, and the Prince goes back to a cave, where he gets a tree, a bucket, and a hoe. He comes back and gives these three things to Zezolla. She plants the tree, she watered it with the bucket, and she wipes the leaves. When she does this, the tree is high as a woman, and a fairy comes out of it, and asks Cat Cinderella which wish she wants to have.

Cat Cinderella asks to be able to leave the house without the stepmother knowing. She is able to do this, and she goes to the ball, held by the King.

She dances with the King, sees the King. He is in love with her, but she has to leave. She leaves very quickly. The king sends a servant to follow Cat Cinderella. But she escapes by throwing money on the ground. She goes back. That happens again, she leaves and the servant follows her, and she throws jewels and money on the ground. The third time, the servant is much too closer to her, so she asked the carriage to go faster, she loses her slipper. So when she is back, the king asks her and everyone else to try the slipper on, but because the slipper fits her, she marries the King.

The six stepsisters see this, and they are very jealous, and they complain saying: the king is not looking at the stars enough.

There was a Prince who has a daughter named Zollo, and Prince is married but the stepmother was not very nice to Zollo. So she was talking to her governess and they were trying to plot a way that Zollo could be free of this nasty Stepmother. She told the stepmother she wanted to wear an old dress from the chest. The stepmother likes this idea, because she wanted Zollo to be wearing something that looked really old. They went to the chest; and as the stepmother opens the chest to take something out; Zollo dropped the chest one her head and decapitated her.

The prince then, very quickly, married the governess, and everything seems fine for about six days. After that, the governess revealed she has six secrets daughters. They came to live with them, and they usurp the role of Zollo, and she became known as Cat Cinderella, and she started to work in the kitchen.

A very important piece of information is that, during the wedding, a dove-fairy came to the balcony and told Zollo that if she ever wanted anything, she should go to the island of Sardinia to see the fairies.

So when all these things start going badly after six days, and she was Cat Cinderella, the father said he was going to the island of Sardinia, and he asked if anybody wanted anything. The six other daughters ask for material things, and Cat Cinderella says she would just like something from the island of the fairies. She says: 'if you don't bring me anything, if you forget, the ship will not move and you won't be able to come back'.

He goes off to the island of Sardinia; gets the things for six the other daughters; but he forgets to get something for Cat Cinderella. So the ship does not go anywhere. Then in a dream the captain finds out the reason why the ship isn't moving, is because the father forgets to get something for Cat Cinderella. He asks the Prince to remedy this. So the Prince goes to island of fairies, and he is given a date tree and a silver napkin. He brings them back, and he gives them to Cat Cinderella. She looks after the tree; she watered it; and it grows tall. She uses the silver napkin to wipe away the leaves.

One day, the fairy comes out of the tree, and she asks if she wanted anything. She says she wanted to be able to leave the house, to get out.

When there is a feast, the fairy makes her to have a nice dress. She goes to the feast and she meets the king. He catches his eyes, and he thinks she is very beautiful. He asks one of his servants to follow her back after the banquet. On her way back, she drops some coins out of the carriage. The servants stopped to take the coins and Cat Cinderella goes home. A few days later, she goes to another ball; and again the servants follows her back; and she throws jewels and pearls out of the carriage and the servant stops to pick them up, and he does not follow her back. There is another banquet-ball that she goes to, and this time, when the servant is trying to follow her; she tries to make the carriage going faster, and she loses a glass slipper.

The servant gets it and brings it back to the king. He has the idea to find the girl with the slipper.

There is another ball but the slipper does not fit anyone, so he realises that Cat Cinderella is not there, and then the prince-father says he has another daughter that did not go to the ball. The king makes sure that everybody is invited. Cat Cinderella shows up and when he sees her, he realises that is the girl he thinks is beautiful, and that he likes. After the meal, she tries the slipper on, it fits and they get married. The other six daughters leaves and seems very angry.

2b1

There is a girl called Zollo, her father remarries, and the stepmum is very horrible to her. So Zollo asks her governess, like a nanny, to deal with her. So, the way they do, is that Zollo asks her stepmother: "Can I get an old dress?", and the stepmother, because she liked her wearing old clothes, and not very nice things, says: "Sure!".

So, when she goes to get the old dress, they decapitated her, so she is dead.

The governess, now, is in a different position. She works for someone else, and has six stepdaughters, and Zollo is relegated to the kitchen, and known as Cinderella.

The father says, he is going away to the island of fairies. Cinderella heard about the island of fairies, she thinks, she will get a wish, if she goes there. So the dad asks the daughters what they would like, and old the six stepdaughters say, to

buy some material greedy things, but she says: "I want you to remember to get me something" but "If you don't remember, you will not be able to come home."

So he goes, and he remembers all the stepdaughters' gifts, excepted hers. So when she gets on the boat, the boat does not leave. The captain got informed in a dream that is because, the father did not get Cinderella's present. So he brings her back some seeds, from a date tree. So he brings them home, and Cinderella grows the date tree. The date tree grows very tall, and then when it blooms, a fairies pops out. And she grants Cinderella, a wish. And Cinderella says: "I want to be able to leave the house when I like, I want to be able to go out to a feast, without asking anybody".

So she got this wish granted, and she goes. And she meets the King. The King, obviously, expresses an interest, but because she does not want to be found that she is outside of the house, she leaves money. And when the servant of the king, tried to found out who she is, he got distracted by the money. So The king organised another ball, to try to find her again, and she goes again. This time wearing a nice dress, and in a golden coach. When she goes, she leaves pearls, and other valuable stones, to distract the servant again. So Again he does not who she is.

Then, she goes again to another ball, in the golden coach, but when she runs away, she leaves a slipper behind. So, she has some way for the king to identify her. So the King invites all the girls in the kingdom, and none of them fit the slipper. So he is like, she is not evidently here. Then, someone brings Cinderella along, she fits the slipper, and they get marries, happily every after.

3a

There was a Prince, and he has a daughter called Zezolla, she was a princess. He wanted to remarry again, and so Zezolla had a new stepmother. Zezolla disagrees with her father marrying again, so she tricked her with the help of the governess, called Carmosita. She lured the stepmother by asking her to grab a dress out of her chest. The stepmother did what she asked for, but Zezolla cuts off the stepmother's head by closing the chest. The governess married the Prince, because it was what Zezolla wanted. A dove came, saying there was something good in a far away land, and the governess told the Prince she had other six daughters. They moved into the castle, and the six stepdaughters were very mean, and they did not treat Zezolla right. She was basically like cat Cinderella. She was treated very poorly, and the six stepdaughters were asking the Prince for very materialistic staff, and did not want Zezolla to ask for staff too.

When the prince went away to grab those staff, the captain of the ship had a dream that the Prince betrayed Zezolla, so he punished him. The prince finally got for Zezolla, a bucket, a hoe, and a seed. He gave those gifts to Zezolla, she planted the seed, and watered the seed using the bucket, and care it with a hoe. As it grows, there was a fairy in the tree and she granted her a wish to get away from the stepmother and stepsisters, to go to the ball.

She did not know the mother to go, but she went and she met the King, and they danced. The king fell in love with Zezolla, but she had to leave. She ran away in a carriage, she was being chased by the servant of the king so she dropped some money, but that didn't work. The servant was getting closer to her carriage, so she dropped by money, she finally got away but she dropped her shoe. The king found the shoes, and was looking for her using the shoe. He finally found her, and they got married and fall in love. The other six stepdaughters were very angry and very jealous about that.

3a1

There is a Prince, who has a daughter, who is a Princess. She is called Zezolla. He is about to marry someone, but the princess, Zezolla, does not like that woman, so she chops her head off. After that, the Prince remarries the governess, who turns out comes out from this magical land. It turns out she has six daughters, who come and live with the prince, and Zezolla and the governess. They treat Zezolla very badly, made her do chores.

The prince decides to go to this magical land, and all the other daughters ask for material things, while Zezolla asks for immaterial things. He goes there and he gets all six daughters' things, but he does not get Zezolla anything. On his way back, the captain has a dream, that the Prince did not keep the promise. So the Prince goes back and gets a tree, a bucket and a hoe.

He brings back, and gave to Zezolla, and she grows the tree, watered the tree. The tree grows high as a size of a woman. A fairy comes out of it. The fairy gives Zezolla three wishes. Her first wish is to be able to go out the house, without her stepmother noticing.

Zezolla manages to do that, and she goes to the ball where she meets the king. The king falls in love with her, but she has to leave. She throws money and jewels on the ground, so he does not find her. She does that a second time. On the third time, the king's people chase her, and get to close to the carriage, and her slipper falls off. The king finds the slipper and makes all the daughters and Zezolla to try on the shoe. And because it fits Zezolla, he marries her.

The daughters complain that the King does not look at stars enough.

3b

There is a Prince and an evil stepmother, and a princess called Zollo. Zollo did not really get along with the stepmother; she confines with her governess saying she wants to go out from that place, and see the stepmother anymore. After saying that, there is day when Zollo says to the stepmother that she wants to wear a dress from the chest. The stepmother was happy because that dress looked really bad and she wanted to make Zollo feels bad. The stepmother opens the chest, and Zollo comes over and drops the chest on her head, and decapitates her.

With the stepmother out if the way, her dad, the Prince, marries the governess. After six day the governess reveals she got six secret daughters. These secret daughters take over the role of Zollo, and Zollo becomes a kitchen maid called cat Cinderella.

Before she went out to the kitchen, a dove came to the balcony; he told Zollo that if she ever want a wish granted, she has to bring back something from the magical island, a fairies island, of Sardinia.

One day the prince is going to the island of Sardinia, and asks if anybody wants something; the six daughters ask for material things. Cat Cinderella just asked to bring back something of the island. She also says to him that if he forgets the ship will not be able move; so he will not be able to come back.

He set off to Sardinia, and once he is there, he gets things for the six daughters, but he forgets about Cat Cinderella; so the ship will not move, and he asks why. The captain of the ship has a dream, that the ship does not move because of what Cinderella says. He said to the prince, and the prince gets back and gets a tree and a silver napkin from the island.

Once he brings it back, Cat Cinderella looks after the tree; she watered it, until it grows to be a big tree. She uses the silver napkin to wipe away the leaves. One day, a fairy appears from the tree. The fairy says that she will grant her a wish, and what she wants. Cat Cinderella says she wants to leave that place; she wants to be free. So one day, when the prince is hosting a feast, the fairy makes a really nice dress, and she goes to this feast. There is another king in the feast, they see each other, and they fall in love.

As Cinderella is leaving, the king gets his servant to follow her back; but she throws coins from her carriage, and so he stops to pick them up, and does not continue to follow her. In another feast, the king asks the servant to do the same thing; but she again throws jewels. The servant again stops to pick them up, and she goes away. On the third feast, when Cinderella is leaving, accidentally she drops her glass slipper. The servant brings back the slipper to the king.

On the fourth feats, king goes there and tries to find Cinderella, but he realises she is not there. He gets the glass slipper, and make everyone to try on, but it does not fit anybody; he realises she is not there.

The king then talks to the prince, and the prince says that not of his daughters are here, that one did not come today. Cinderella comes to the next feast, because of this request. The king realises that she is the girl he fell in love with, she tries on the slipper; it fits. They live happily ever after and they get married.

3b1

There is this girl called Zolla, and her father remarries with her stepmother, who is very horrible with her. So she asks the governess to help her deal with the stepmother. They design a plan. So Zolla asks her stepmother if she can get an old dress, and her stepmother says yes, because she likes her wearing old clothes. When the stepmother is going to get the old dress, they decapitate her, and kill her. The governess is in a new position, and Zolla is relegated to the kitchen, and she is called Cinderella.

The father then wants to go to a fairyland, and asks his stepdaughters what they want, all of them say they want clothes and other material things, but Cinderella says to get her something, and if he forgets he won't be able to leave.

He remembers all his stepdaughter's things, but he forgets Cinderella, so the captain says he cannot come back. So the father gets her a seed from a date tree. He brings the date tree's seeds back to Cinderella, and she plants them. It grows to a very tall tree, and out of the tree a fairy come out of it, and she makes her wishes. Cinderella wishes to be able to leave the house whenever she wants. The wish is granted.

She leaves the house and she goes to the King's ball. Obviously, the king expresses an interest in her. But she does not want to be found outside the house, so she runs away and leaves some money. The king sends his servant after her, but he gets distracted by the money, and does not find her.

The next time she comes with a nice dress and in a gold coach. She again interacts with the king, and leaves again. She throws pearls and gems to distract the servant. She comes again in a golden coach and interact again with the king. This time she leaves a slipper. Afterwards, the king invites all the girls in the kingdom to try on the shoe, but no one fits the shoe, because she has a unique size of feet. Somebody brings Cinderella, and she tries on the shoe, it fits and they get married, and live happily ever after.

3b2

There is a girl called Zollo, and she has a governess. Her father remarries, but she does not like the new stepmother. She buys her old clothes, and she is mean to her. Zollo tells the governess. Zollo then goes to the stepmother and asks for an old dress, as distraction, and Zollo and the governess decapitate her.

However, the governess has new children, she brings six material greedy children. Zollo is relegated to the kitchen, and they call her Cinderella.

Cinderella then discovers that his father is going to the island of fairies, and Cinderella knows that in the island of fairies you can get wishes. Father asks all the children what they want, and all six children say they want greedy material things. Cinderella says to her father: Can you get me a wish? If you don't get me a wish, you cannot come back.

So the father goes, he gets all those things but forgets about Cinderella. He tries to get on the boat, but the boat won't leave for some reasons. The captain of the boat finds out in a dream, that the father needs to go and get something for Cinderella. So he goes to get some seeds from the date tree, and goes back. Cinderella plants the date tree, and it grows up to be a massive date tree. A fairy comes out from the date tree, and Cinderella wishes that she could be let out of the house, since she has been kept in the house, and kept in the kitchen.

The fairy agrees and grants a wish, and Cinderella goes out to a ball. The king of course, falls completely in love with her, but she has to escape. She leaves some money, and the money distracts the servant, and he cannot go to find her so the king cannot find her.

On the next time, she goes and she gets a new dress and golden coach. She arrives there, and the king and her dance, and it is great. This time she leaves ruby and pearls, and that distract the servant again. Then the last time she goes back, but when she leaves, she leaves the slipper.

This time they found her, they come to the house, and since the shoe does not fit any of the six children, evidently Cinderella is not here. Someone brings Cinderella, and it fits, and they got married.

4a

There is a prince who had a daughter called Zezolla, the prince wants to remarry, but Zezolla did not like the stepmother, the person whom the father wants to remarry. She lures to get a dress out of a closet, and trapped her head in the closet, with the help of the governess. Then the Prince marries the governess, and the governess has six stepdaughters. They went to live with Zezolla, but she was treated mis poorly.

She then had a dream that the Prince will mistreat her, so she received a bucket, a seed, and water, and a hoe. She planted the tree, and there was a fairy in it, and she wanted to help her to escape from the stepmother.

She went to the ball, and there was the king there, and they danced and he fell in love with her, but she had to run away. She was being chased by the servant and she dropped some money, and the shoe came off. The king was searching for who losing the shoe. He found her and he fell in love.

4a1

There is a prince who has a daughter who is a Princess, called Zezolla. The prince is going to marry a woman, but Zezolla does not like her, so she chops her head off. The prince does not marry her, but he marries the governess who from a magical land. The governess has six daughters and they all come to live with Zezolla and the Prince. And they are mean to Zezolla. She does not like them, they made her do chores.

The prince decides to visit the magic land from which the governess is from, and they asked for presents. The six daughters of the governess all ask for material things, Zezolla, asks for immaterial things. The prince goes, he gets all the presents but he does not get Zezolla' immaterial things. He goes to return home, but the captain had a dream that the prince has not fulfilled getting the presents to Zezolla. So they go back and the prince gets her a hoe and a seed. He brings them back, and a tree grows and gives Zezolla three wishes. Zezolla wishes that she can go out of the house without the governess seeing her.

She goes, and she goes to the ball where she meets the king and she dances with him. But when she has to live, she is followed and she throws money and jewels. That works, and she does it a second time. On the third time, the king's servant sees her carriage and she loses her slipper. The king makes all the daughters try on the slipper and it fits Zezolla, and the king marries Zezolla. The other daughters complain that the king does not look at the stars as often as he should.

4b

There is a prince who is married to an evil stepmother, and a princess who is called Zollo. Zollo did not get along with her evil stepmother; she treated her very badly. She is used to confine in her governess. One day, she told her stepmother she wanted to wear a dress from a chest. The stepmother was very happy because the dress looks very ugly and she wanted to make Zollo feel bad. Zollo takes the stepmother to the chest, takes out the dress, and drops the chest on the stepmother, and she is decapitated. The prince marries the governess. The governess reveals she has six secret daughters; they took over the role of Zollo, and Zollo becomes a kitchen maid and she is called Cat Cinderella.

She is working in the kitchen, one day, and a dove comes to the window. The dove says she will be granted one wish, if she can get something from the magical fairyland of Sardinia.

One day, the Prince is going to Sardinia, and he asks which gifts they wanted him to bring back. The six stepsisters say they wanted material things; while Cinderella says she wants something from Sardinia. She says that if he forgets to bring something, the ship will not move on the way back. So the Prince goes, and he gets things like dresses, and fabrics for the six stepdaughters, but he forgets Cinderella's gifts. He is on the ship, but the ship does not moving. He asks the captain why the ship do not move. The captain has a dream, wherever Cinderella said, that is why the ship is not moving. He tells the prince, and the prince goes and gets Cinderella: a tree and a silver napkin. He brings them back, and Cinderella looks after the tree, she watered it, and she uses the silver napkin to brush the branches of the tree to remove the leaves. One day, a fairy comes out of the tree, and says she would grant her one wish. Cinderella says she wants to leave that place.

She then gives Cinderella a very nice dress, and they go to the feast. In the feast there is a king; and the king and Cinderella fall in love. When she leaves, the king sends one of his servants after Cinderella, and she drops the coins. The servant distracted picked them up, and Cinderella gets away. On the second feast, the king again sends the servant after Cinderella, and she drops some jewels, and same thing happens, he gets distracted, picks the jewels and she gets away. On the third feast, same thing happens, but she leaves behind the slipper. On the fourth feast, the king looks for Cinderella, and if anybody can fit in the slipper, but cannot find anyone, because she was not there. Then because Cinderella heard of this, she went on the fifth feast; and on the fifth feast he finds that the slipper can fit her. They get married and live happily ever after.

4b1

There is a girl called Zolla, she has a father. He remarries her stepmother, but she does not like the stepmother. So her and her governess make a plan to get rid of her. So Zolla asks the stepmother to buy her a dress, and old dress, because the stepmother likes her to wear old clothes. The stepmother says yes, and when she goes they decapitate her and kill her. The governess gets promoted, and Zolla is sent down to the kitchen where is called Cinderella now.

Her father asked the stepdaughters what they like from the shop, and he goes out shopping and she says that if he does not remember what she wants then he is not allowed to get back. He goes to the shop, and buys everything from his stepdaughters but forgets what Cinderella wants. He can't live. Then he gets a seed from a date tree and brings it back to her. She plants the tree in the garden, and it grows and a fairy comes out of it. And the fairy asks her for what she wishes for. She says she wishes she could leave the house whenever she wants to. The fairy grants the wish, and she goes out to a ball and she sees the king. She doesn't want to be seen so she run away and she throws money behind her. The king sends his guards off to find her, but the guards are distracted by the money. She does it again wearing a golden dress, she throws rubies and gems. This happens a third time, and she loses her shoe. the king goes around to everyone in the kingdom and ask to try the shoe, but it would not fit any of them because she has a unique shoe size. He eventually finds her, they get married and they live happily ever after.

4b2

There is a girl named Zollo, she has a governess, and Zollo's father remarries, but the stepmother is very mean. She buys her old clothes and she is not very nice to her. The governess and Zollo go to try to kill her. They go and they decapitate the stepmother, and Zollo distracts her stepmother by asking for an old dress.

The governess has six children, and they are all greedy and like material staff. Zollo is appointed to the kitchen and she is called Cinderella, and she has to do chores and staff and she is sad.

Her father goes to a wishing island and he asks all the kids what they wanted, and they all want material staff. Zollo/Cinderella asks for a wish, and she says he cannot come back unless she gets the wish. Her dad goes, gets all the staff for the greedy kids, and almost forgets about Cinderella. The captain of the boat, since the boat is not going, has a dream and says to the dad he needs to go and get something for Cinderella before they could leave. He gets a date tree, he gets a bunch of seeds, and when he is back, he gives them to her. She grows a big date tree, and a fairy comes out of it, and asks Cinderella what she wants. Cinderella says: I want to let out of the house, because she has been stuck to the kitchen.

She gets her out, and she goes to a ball, and the king falls in love with her. She is wearing a gold dress. She goes to another ball, and there are rubies and she distracts the servant. At one point, she loses the slipper, and the king finds it, he goes to the house but it does not fit any of the six children. They find Cinderella, and it fits her and they get married.

CAT CINDERELLA SECOND GENERATION

1a

There is a Prince, who has a daughter, whom he loves very much. She becomes Cat Cinderella, later. He marries a new wife, whom the stepdaughter does not like. So the stepdaughter complains to her governess, about the new wife. And the governess, tells her to ask the stepmother, for an old dress in a chest, to pick out. So the stepmother, goes to help out her stepdaughter, find a dress, and when the stepmother is leaning into the chest, the daughter closes the lid, and decapitates the stepmother.

Part of the deal, was that the governess would become the new mother, if that happened. So the stepdaughter, convinces his father to marry the governess. But when that happens, the governess introduces her own daughter, into the picture, who were not evident beforehand.

The stepdaughter ends up having a role in the kitchen, so she is pushed to the side.

One day, her father is going on a trip, and wants to buy presents, he is going to Sardinia. The other stepdaughters ask for material items, while his daughter asks him to speak to the fairies. Because a dove has approached her before, saying to go to speak to the fairies there, and things will be solved. So the father, goes, but he forgets, so when he returns his boat won't leave the port. So he returns back to the island, and there, he finds the cave of fairies. They are happy that her daughter, whom name is cat Cinderella, remembers them. And they provide the father, to give to her, a bucket, a shovel as gardening tool, and a specific tree. The Bucket is to feed the tree, and everything to garden it, with water. He brings all the gifts back to the stepdaughters, and gives the specific gifts, from the fairies, to his own daughter. She plants the tree, and a fairy comes up out of that tree, and grants her with specific wishes. She asks to go to the ball, where the king is.

She provides a dress for her, and Cat Cinderella goes to the ball, but she has to be back each night. The king's servant keep trying to follow her, each time, because they want to know, who she is, and where she is going. But she is always managed to outrun them.

But one of the nights, before she gets back, the servant is coming very close to her, when she is sitting on her coach, she asks the coach to go faster, and in the process, she loses her slipper. The king finds the shoe, and puts out the word, that all the women in the town, to come to palace, to try on the shoe, to see if it fits. When Cat Cinderella shows up, he immediately knows it is her, she puts on the shoe, and it fits. She marries the King.

1b

The heroine is called Susanna, has a dad, called the Prince. The first wife of him, the mother of Susanna, has died. The father marries a new stepmother, who treats Susanna quite poorly. Susanna talks to the governess, who said she will adopt her, and be lovely with her, if she gets rid of the old stepmother. So, she asks the stepmother, if she can search and try an old cloak, from a box, and the old stepmother is pleased that Susanna is going to wear some dirty old clothes. She starts opening the box, and Susanna kicks out the leg, and the chest decapitates the stepmother.

Susanna convinces the Prince, to marry the governess. And they do.

For six days, everything is fine, the governess, the new stepmother, is lovely to her. But then, she brings in six stepsisters, who usurp the palace, and Susanna is reduced to a kitchen maid, and she is called: Cat Cinderella.

At some point she is approached by a dove whose said, if you ever want to visit the place called Sardinia, you will get something. At some point, the prince is going off to Sardinia, and he asked his stepdaughters and actual daughter, if they want anything.

The stepdaughters ask for beautiful staff, but Susanna, Cat Cinderella, does not want anything. He heads off. However, when the bird approached Cat Cinderella, in the first place, he said to her that if the father forgets about her, he won't leave.

King is there, on the beautiful island, and he is getting the beautiful staff for the stepsisters. But, he forgets about his daughter. Even if, she said she did not want anything, he was going to give her something. But because he forgot, when

he tried to go to the boat, it won't move. Then he goes to the cave of the fairies, and the king of the fairies comes up to him, and gives him: a hoe, a bucket, and a seed. The hoe is to make sure the tree is tidy, and the bucket is for water.

The king is finally able to leave, he goes back to where they live. The stepsisters love the presents. Cat Cinderella looks after the tree, very nicely. She wipes the leaves with a silver napkin. After seven days, it is about half of a woman, and a tiny little fairy comes out, and says: "What do you wish for?" She wishes to leave the house, without asking for stepsisters' permission.

Then, there is a ball. On the first night, the fairy gives her a nice dress to go to the ball with. On a second night, there is a car drove by four horses. The servant of the King is following her, to understand what she is doing.

Susanna throws pearls and diamonds out to the servant, in order to push him away. And she goes to the ball.

On the third night, same thing happens, but she has a car made of golden. On the forth night, she loses her slippers, and the servant brings it to the king.

During all these balls, she has getting along quite well with the King of the kingdom. He got the slipper from the servant, and wants to know who fits the slipper, and so he can identify with which girl, he was getting along with. On the first day, no luck, but on the second day, when he meets Susanna, he recognises her, and marries her.

The stepsisters are really angry about, thinking it should be them, and go back to their mother, the governess, saying: "The king is mad, he does not look at the stars well enough".

2a

There is a Prince, who has a daughter. He remarries, but the stepdaughter does not like that stepmother. So the stepdaughter plots with her governess, and they decide, she is going ask to her stepmother, for a dress from one of her chest. The stepmother will pick up a dress, and when she is leaning into the chest, the daughter decapitates her. Part of the plan, is that the governess will then marry the prince, and become the new mother.

This happens, the stepdaughter persuades her father to marry the governess. But then, the governess, turns out she has her own daughter. She introduces her into the family, and they did not know her, before. The original daughter of the prince, is given a role in the kitchen, and she is called Cat Cinderella.

The Prince is going on a journey, to a foreign land, and the other daughter asks for material gifts, while Cat Cinderella, asks him to go to speak to the fairies, in a cave, because a dove has told her, to go and speak to the fairies there.

So the father goes to this land, and when he is going to leave, he forgets about speaking to the fairy. He tries to leave, but the ship would not leave the port. So he returns back to the land, and there, he finds the cave of fairies, and they are pleased that Cat Cinderella remembered them. And they gave him some gifts to give to her. They give to him: a bucket, a shovel, and a tree. The Bucket is to feed the tree.

When he got back, he gives all these gifts to right daughters, the material things to the daughter, and the tree and gardening tree to his own daughter. She plants the tree, and a fairy comes up out of it, and he grants her with wishes. She wishes to go to the ball.

So the agree is that she goes to the ball, but she has to come back each night. The king's servant is trying to follow her, to find out where she is going. One night he is really close to her, while she is coming back on the carriage. She asks to go faster, and in the process, she loses her shoe. The king finds the shoe, and puts out the word, that all the women in the land, have to come and try on the shoe. Cat Cinderella comes to try on, he knows it is her, and she marries the King.

2b

The story is about the girl called Susanne and her life, following after the death of her biological mother. After the death of her biological mother, her father, the Prince, marries a woman who is not very nice to her. Susanne is not very happy that she is living with this nasty stepmother. She goes and speaks to the woman called the governess. The governess promises that if she somehow manages to get rid of her stepmother, she is going to marry her father, and she is going to

be really nice to her. Susanne comes up with the plan to get rid of her stepmother, which involves pretending she wants to wear old clothes, which pleases the stepmother because she thinks Susanne should wears old and dirty clothes.

While the stepmother is looking through the chest, containing old clothes, kicks the stick which is holding the chest open, and the lead decapitates the stepmother.

Following the death of her first stepmother, Susanne convinces the father to marry the governess. For the first six days, the governess keeps her promise, and treats Susanne very nicely. After the six days, the governess brings her daughters into the palace. They usurp the palace, taking control of it, and force Susanne to become a maid, and she is now called Cat Cinderella.

This makes Cat Cinderella very sad. Following this, a dove visits Cat Cinderella and tells her that if gets something from Sardinia it would be good for her, and she would be saved.

Later the Prince is going on a trip to Sardinia, and asks her daughters and stepdaughters if they want anything. Her stepdaughters ask for beautiful staff, whereas Cat Cinderella does not ask for anything.

When the dove before visited her, he told her that if the Prince forgets to bring something for her, he will not be able to return. So Cinderella fears that if she is asking something to the Prince, inevitably that will lead the Prince not to be able to return. She decides to play smart and not ask anything. However, the father wants to get something for her anyway. But he forgets, so when he tries to get back to the boat and return to his house, he is unable to do so. So the Prince visits the cave of fairies, and the king of fairies gives the prince a hoe, a bucket, and a seed. These are substitutes to the gifts that the Prince wanted to give to Cinderella.

The purpose of the hoe is to get the plant tidy, and the bucket is to fetching water to the plant. The father is able to leave and gives the three items to Cat Cinderella. Cat Cinderella is happy that she has received the gifts, because of what the dove had told her.

She is very careful to grow this plant; she cleans the leaves. After a month, it reaches the length of half woman. A fairy comes out of the plant, and asks Cinderella if she has any wishes. Cat Cinderella asks to be able to leave palace, without having to get permission from her stepsisters. At this moment, a ball is going on and the fairy helps Cinderella to go to the ball. She gives her a nice dress, and a carriage and horses so she can go there. At the ball, she starts getting along with the Prince.

The King at the ball assigned the servant to follow Cat Cinderella because he wants to know where she lives. She uses the jewels and pearls to distract the servant. At the following ball, when she leaves, she is followed again by the servant, and in the rush, she loses her slipper. The king wants to find her because he wants to marry her. The first day he cannot find her, but on the second day, he finds Cat Cinderella and shoe fits her, and the stepsisters went so upset because they wanted to marry the King. They go to say what happened to the governess, and the governess says: the king does not look at the stars. That means the governess compare her children to stars and the king is not looking at the most attractive people.

2b1

Once upon a time, in a kingdom, there was a girl called Susanne, who was a daughter of a Prince. The prince's wife has just died, so he was left without a wife, and he married someone else, called the stepmother. For a while, they were married, and the stepmother was cruel to Susanne. Susanne wished to be adopted by the governess, who was so much nicer to her.

The governess agreed with Susanne, that if the stepmother was passed away, she will be allowed to adopt Susanne, and they would live happily.

One day, Susanne asks the stepmother if she could try on some of her clothes. The stepmother opened the chests full of old dirty clothes, and asks Susanne to catch a cloak. The chest suddenly decapitated the stepmother, and she died.

The prince was then convinced by Susanne to marry the godmother, and for six days they were married happily, until the governess, brought her six daughters to the palace, and usurp the palace. They reduce Susanne, to a kitchen maid. She was very unhappy about it.

One day, a dove came to Susanne and told her that there was this island, called Sardinia, and to go there.

One day, her father, the prince, was going on a journey to Sardinia. He asks Susanne and the stepdaughters, what they would like. And the stepsisters ask the prince for beautiful staff, and Susanne said she did not want anything. The dove also said, that if the prince would go to the island and forgot about Susanne, he would not be allow to leave the island.

With this in mind, he went to the island, he forgot about Susanne, and just found the beautiful staff. He tried to go on the boat, but could not leave the island.

He went to the cave of the fairies, and the king of the fairies came out, and he gave to the prince: a hoe, water, and a seed, for plant a tree. That was for Susanne, so he was allowed to leave the island.

On the returning home, the stepsisters were thrilled with the beautiful staff. He gave the tree to Susanne to look after. And she cared it with the silver gloves, and she care very well, until it grows up until a size of a woman. A fairy came out of the tree, and asks Susanne for what she wishes for. She made the wish to leave the kingdom, without asking the stepsisters and to be free.

After this, there were a series of three balls, and the fairy from the tree, gave her a dress, a beautiful dress with which attend the ball. On the first ball, on her way to the ball, the servant came out asking where she was going. She threw silver jewels and pearls, to make him going away. She went to the ball, and started talking to the King.

On the second day, the same thing happens, but she was in a golden chariot, car, and she attended the ball. On the third night, she lost her slipper. Then, the king wanted to identify who lost that slipper, because that must be the girl with who he got on so well with.

He set out to identify her, and he found Susanne, matched the slippers, and married her. The stepsisters were very angry because they felt they should have married the king. They were so angry, and told the godmother: the stars do not see clearly.

3a

There is a Prince, who has a daughter. He marries a new woman, who becomes the girl's stepmother. The girl did not really like the stepmother. She plotted with the governess, to get rid of the stepmother. She asked for a dress from the stepmother's chest. As the stepmother goes to get the dress, the girl decapitates her. Part of the plot, would be then the governess will then marry her father and become her new stepmother.

When this happens, the governess brings her own daughter, that nobody knew about before. The girl, the daughter of the Prince, is given a job in the kitchen.

As the prince is asked to go on a journey in a distant land, he asks what they both would like. The daughters of the governess ask for material things, while his own daughter asks him to speak to the fairies in the woods, as she was told by a dove.

While there, the prince collects the material things, but he forgets about the fairies. He goes back to the boat, but the boat would not leave. He returns to the land, he meets the fairies, and they gave him three gifts. They gave him: a bucket, a shovel, and a tree. He returned back home, he gave the material things to the governess's daughter. He gave the tree, the bucket, and the shovel to her own daughter. She plants the tree, a fairy comes out, and he grants her some wishes. She requested to go to the ball. Her name was now Cat Cinderella.

When she is at the ball, she meets the king, and somebody was sent to follow her, and she tries to go away and wants to get faster in her carriage. But while doing so, she loses her shoe. The king sends out someone to find the owner of the shoe. Cat Cinderella is found, and marries the King.

3a1

The Prince had a wife, but he wanted to remarry. So he remarries another woman, but his daughter does not like this. So she plots with the governess to see if they can kill her off. What happens is that the daughter asks her stepmother for one of her dresses from a chest. So she goes to the chest and tries to pick up a dress. At that time, when she is leaning on the chest, the daughter decapitates her, so she is dead.

The daughter then tries to convince the father to marry the governess, and that works out. But they did not realise that she has another daughter, they did not know that before. The Prince's daughter does not like that, and she is made to work in the kitchen while the other daughter does not have to, and she becomes Cat Cinderella.

One time, the Prince was set out to go on a trip to a land. The governess's daughter asks material goods, while the Prince's daughter asks him to go to see the fairies, that are in the cave, because a dove told her that she needs to see those fairies in the cave. He goes on this far away land, got all the material goods that the stepdaughter asks for, and he forgot about the fairies. He tries to go away on the ship, but the ship won't move from the port. He goes back to the land, found the fairies in the cave. They gave him: a shovel, a bucket, and a tree. He goes with all these gardening staff, and goes back and give to his daughter. She plants the tree; a fairy comes out of it and says if she has a wish.

She wishes to go to the ball. The servant wants to know what she is off doing, so he follows her. She asks the carriage to go faster and faster to get away, but she drops her shoe. The king is asking to who the shoe belongs, because it must be the woman he was dancing with, which is Cat Cinderella.

He goes on the land, Cat Cinderella puts on the shoe, it is her shoe, so they got married.

3b

The story was about a girl called Susanne who lost her biological mother. When this happens, he moved into with another lady with whom she did not get along well and who she treated her quite badly. So Susanne went to the governess to ask her for her help. The governess said that if she managed to get rid of this lady, then she will marry her father and treat her well.

Susanne's plan was to pretend to this evil's stepmother that she wanted to wear old clothes. The stepmother was happy because she thought she should wear dirty clothes. She takes her to a chest, that contains old clothes, and when the stepmother is searching, she removes the stick and lead falls and decapitates her. The governess marries her father who is a prince. She keeps the promise not to be mean to Susanne for six days. Then on the six day, she invites her daughters, her stepsisters, to live with them. They start to treat Susanne horribly and make her a maid. She then becomes Cat Cinderella. She is visited by a dove, and he says that she can get out from being mistreated by something from Sardinia The prince then goes away on holiday and if he brings something back to her, then he can return. If he forgets something, he cannot return. She still does not ask the Prince to bring something back. When he does not bring something back, he cannot return, so he goes to cave of fairies. They gave him a bucket, a seed, as substitutes of the gifts for Cat Cinderella. He brings them back to, and she grows it and takes care of the seeds. The tree grows the size of half a woman, and a fairy comes out and this fairy enables her to go the ball. When she is at the ball she gets on with the king, but the king is not too happy, and he makes a servant follow her so he can know where she lives. She distracts the servant with jewels. The second time she leaves early from the ball, and leaves her slipper. The king uses the slipper to try to find her, because he wants to marry her. He finds her and the evil governess says to her daughters that the king was not looking at the stars. She says that her daughters are more beautiful than cat Cinderella.

3b1

There is a girl called Susanne, whose mother died, and her father, The Prince, married the stepmother who is not nice to her. She wished that her governess, who was nicer to her, was her mum instead. Very suspiciously, Susanne asks for some dresses out of her stepmother's chest. And then the chest decapitates the stepmother. She then convinced the prince, her father, to marry the governess. The governess brought all her daughters to the castle. They usurp the castle and made Susanne a kitchen maid.

In the meantime, a dove comes and tells Susanne about a prophecy: if the father will forget about her in his journey in Sardinia, he will not be able to leave.

Her dad goes to Sardinia, and he asked all his stepdaughters, and also his own daughter, what they want. They asked for staff, but she said she did not want anything. However, he forgets about her, until he goes to see the fairies. They gave him: a hoe, a seed, and water, to plant the tree. All these are for Susanne, so he is able to leave. He gives her the tree, and Susanne cares about the tree until it grows, and produces this fairy. The fairy asks her what she wishes for. And she replies she wants to leave the house without getting permission by her new stepmother and sisters.

She leaves and she is given three gowns to go to three balls. In one of this, she meets the King who fancies her. She leaves in a chariot. On the third ball, she loses a slipper, and this is how the King is able to find her and they get married.

The stepsisters are annoyed, because they think it should be them to marry the King.

3b2

There is a girl called Susanne, she was a daughter of a Prince, who got married with somebody called the stepmother. Susanne really was not happy with this stepmother, so she just wanted to change her parents. She really liked the governess, and wanted to be her stepchild. She knew that if the stepmother dies, she could be adopted by her governess. So she asks the stepmother to try some clothes on, together, and the stepmother said ok. She opened the wardrobe with ugly clothes, and she gave Susanne a dress, and at that time, the lid broke and decapitated the stepmother. The Prince marries the governess, and they live happily. But after six days, the governess decided to bring back six daughters to live in the mansion of the Prince.

Susanne was not happy anymore, because these six daughters decided she would become a maid, and work for them, and not be part of the family. She then came across with a dove, and the dove told her if she ever goes to an island called Sardinia, she could be able to run away from her situation.

Her father, the Prince, went to Sardinia, and he asked all the daughters and Susanne, what did they want as present. All the daughters wanted something precious like jewels, beautiful staff from Sardinia. Susanne instead did not want anything. But if the Prince goes there and forgets about Susanne, he won't be able to leave and come back to his kingdom, but stay in Sardinia. He went there, and he did forget about Susanne, but he did buy all the beautiful staff for the daughters he adopted.

In the end, he could not leave Sardinia, so he stayed there, and went to the kingdom of fairies. He spoke with a fairy, and the fairy gave him: water, a seed to plant a tree. The fairy said that was for Susanne.

After that, the Prince could leave Sardinia, and went back, he gave the beautiful staff to his adopted daughters, and he gave Susanne the seed and water. She cared about the tree, it grow over time. Finally, a fairy came out of this tree, and the fairy granted her a wish. She wishes to get away from the situation, from the place and move away.

So the fairy said ok. Then there were three balls, and Susanne was not supposed to go there. But the tree provided her a beautiful dress and beautiful staff. When she was on the way to the ball, she saw the servant who said she could not go there. She gave him some silver jewels so she could go. She was beautifully dressed and she spoke with the king of this ball. And she came back, and went to a second ball with a golden carriage. She then went to the third ball, and she lost her shoe. The king found the shoe and he wanted to find the girl because he liked her. He found Susanne and she fits the shoe. The other daughters of the governess were very unhappy, and said to the governess: the stars were not aligned.

4a

There was a Prince, and this Prince has a daughter. The prince remarried, and the daughter of the prince did not like the new wife, so she plotted with the governess. She asked her stepmother to bring her a dress, but then when she went to get the dress, the girl decapitated her, because she and the governess were planning to make the governess, the new stepmother. Their plan worked. However, the governess had several daughters that anybody knew beforehand.

Once the Prince is going into the woods, and his stepdaughters and his daughter asked for something that he could bring back. The daughters of the governess asked for material things, whereas his actual daughter asked him to talk with the fairy, because she has been in the woods before and a dove had told her to talk to the fairy. So the prince went to the woods and collected the material things but forgot about the fairies. He tried to get a boat back, but he could not take it. So he went back to the land and he talked to the fairies, and they gave him a shovel and a bucket, and a seed. The daughter of the Prince planted the seed, and from the tree came out a fairy, and the fairy granted the daughter a wish. And she wished to go to the ball that the king was hosting.

She went to the ball, and someone was following her on her way home, so she hurried quite a lot and she lost her glass slipper, the king went to search for the girl who has the slipper. Finally, she married the King.

4a1

The prince was married and he had a daughter, but then he wanted to marry someone else. He married a woman, but the Prince's daughter does not like her, so she asked the stepmother to give her a dress from her chest. So when she was leaning down into the chest to get the dress, the daughter killed her, so that is how it was dead.

The daughter and the governess wanted to kill the stepmother, so after that the daughter asked the prince to remarry the governess, so she got married with her dad. He did not realise that the governess had a daughter, so when they married the stepdaughter and the stepmother did not like the daughter, and they made her do all the house works and she became Cat Cinderella.

There is one time, when the Prince needs to go someplace to work, the stepdaughter asks for material goods, while the Prince's daughter asked him to go to see the fairy. When he arrives to the place, he got the stepdaughter's material goods, but he forgot about fairies. So when he was trying to leave, to get to the port to take the boat back, he could not because the boat would not leave the port. So he went back to see the fairies. The fairies gave him three things, including a tree. When he gets back, the prince gave the daughter the tree, and the three things. The daughter planted the tree, and a fairy came out of it. The fairy asks her if she had a wish, and she asked if she could go to the ball. Then, the servant wants to know where the Prince's daughter is going to and he follows her. The prince's daughter asks the carriage to go faster and faster, and she left her shoe. The prince who danced with her, wanted to know to whom the shoe belong to, because he will know that the shoe belongs to the girl he danced with. He found Cat Cinderella, and they got married.

4b

It is about a girl called Susanne, she lost her biological mother, and has to live with a woman with who she did not get along well with.

This woman treats her very badly, this evil stepmother. So Susanne goes to the governess and asks her what to do. The governess then says to her, that she needs to tell to her stepmother that she wants to wear old clothes, with who the stepmother is ok with, because she wants her to wear old clothes anyway.

When they go to the chest, the stepmother is killed with a stick from the chest. Then the governess marries the prince, and she treats Susanne well for six days. Then after six days, she invites her children, who are now the evil stepsisters, and start treating her very bad, and she becomes Cat Cinderella.

Cat Cinderella is then treating very badly, then a dove arrives and says to her that when the prince goes away, and he has to get a gift from Sardinia. If the prince brings something back, then he is allowed to return, while, if he does not he is not allow to return. Susanne does not ask for any gifts, so he is not allowed to return. He goes to a cave to gets some substitutes present which were a seed and a bucket. He gives them to Susanne, so he is allowed to return. Susanne looks after the seed until they grow into a woman sized tree, and a fairy comes out of it. She says she is allowed to go to the ball, she meets a king, but he is not happy. She loses her shoe, and he wants to finds Susanne, but the evil governess says that the king does not look at the stars, her two daughters much more nice looking than Susanne.

4b1

There is girl called Susanne, her mother dies, and her father was a Prince. The Prince married her stepmother, but she did not like her stepmother because she was not very nice. She asked for some dresses from a chest to her stepmother, and the chest decapitates the stepmother. She prefers the governess who was nicer to her, so she convinced her father, the prince, to marry the governess, who then brought her daughters to live with them all. The governess's daughters then made Susanne a kitchen maid.

Then a dove came to tell her a prophecy that if her dad went to Sardinia and forgot about her, he won't be able to leave. Then the father asked the stepdaughters what they wanted, and the stepdaughters said staff, but Susanne did not want anything. When he was there, he forgot about Susanne, and he was unable to leave until some fairies gave him a hoe, a seed, and water, to plant the tree. They said it was for Susanne, so he was able to leave. She cared for it, and it produces some fairies that gave her three wishes. She said she wanted to leave the castle without stepsisters' permission. They gave her three dresses for the three balls. In the first ball, she met the king and she left on the chariot. On the third ball, she left her slipper so he was able to find her. They got married, and the stepsisters were angry because it should have been them.

4b2

It is the story of Susanne, who is the daughter of a Prince. She does not like her stepmother, so she decides to get rid of her, and have her father marrying the governess. She asked her stepmother to wear clothes with her, and she gets somehow decapitated. So the Prince can get married. But this does not really turn out how she expected, because her stepmother brings back her daughters, and they all decide she will be their maid. She really wishes to change her situation, so she hears about a place called Sardonia, and her father goes there. He asks all the daughters if they would like him to bring some gifts. The other daughters say they would like precious things, but she only wishes him not to forget her. But when he goes there, he does buy precious things but he forgets about his daughter. He cannot go back, because he could only go back if he remembered her. He finds a fairy, who gives him a water and a seed to plant and that's how he can go back to his family. He gives the plant to his daughter and it becomes a tree. She cares for the tree, and it grows, and there is a fairy whom comes out of it. She can ask him to change her situation. She hears about three balls, but she cannot attend them. The fairy helps her, and gives her a dress. She goes to them, and on her first ball she loses her shoe. The king who hosts the ball, finds the shoe and wants to find the girl back. The shoe fits her and they get married.

List of characters and characters states for six transmission chains (Rhodopis; Shen Hsien; Cat Cinderella)

Rhodopis first generation: list of characters

Character 1. Name of the hero: Rhodopis: absent [0]; present [1]

Character 2. A: Villainy: absent [0]; present [1]

Character 3. A: Heroine is Kidnapped: absent [0]; present [1]

Character 4. A: by pirates: absent [0]; present [1]

Character 5. 7a: Heroine is a slave: absent [0]; present [1]

Character 6. F: magical object: absent [0]; present [1]

Character 7. F: by old man: absent [0]; present [1]

Character 8. F Reasons: old man sees her dancing: absent [0]; present [1]

Character 9. F Reasons: old man took pity on her: absent [0]; present [1]

Character 10. F (shoes) are rose and gold: absent [0]; present [1]

Character 11. F (shoes) are dancing: absent [0]; present [1]

Character 12. F (shoes) are with leather: absent [0]; present [1]

Character 13. Meeting place is Ball: absent [0]; present [1]

Character 14. G: heroine goes to the meeting place: absent [0]; present [1]

Character 15. G-: Heroine cannot go to the meeting place because of servants: absent [0]; present [1]

Character 16. G-: Heroine cannot go to the meeting place because of pharaoh: absent [0]; present [1]

Character 17. B: Heroine is dispatched: absent [0]; present [1]

Character 18. B: Heroine goes to the river: absent [0]; present [1]

Character 19: D: Encounter with the Donor: absent [0]; present [1]

Character 20. D: hippo splashes her slipper: absent [0]; present [1]

Character 21: E: Reaction to the Donor: absent [0]; present [1]

Character 22. E: Heroine puts the shoe to dry: absent [0]; present [1]

Character 23. J: Branding: absent [0]; present [1]

Character 24. J: lost shoe: absent [0]; present [1]

Character 25. J: shoe is stolen: absent [0]; present [1]

Character 26. J: stolen by falcon: absent [0]; present [1]

Character 27. KF: shoe found by chance: absent [0]; present [1]

Character 28. Pharaoh is bored at the party: absent [0]; present [1]

Character 29. Hiding place: absent [0]; present [1]

Character 30. M: Difficult task: absent [0]; present [1]

Character 31. M: shoe test: absent [0]; present [1]

Character 32. N: Solution of the Task: absent [0]; present [1]

Character 33. N: shoe fits: absent [0]; present [1]

Character 34. L: Servant protest: absent [0]; present [1]

Character 35. W. Wedding: absent [0]; present [1]

Character 36. "She is the most Egyptian of all-her eyes are green like the Nile": absent [0]; present [1]

Rhodopis first generation: conditional-absence coding

RH0	1	1	1	1	1	1	1	1	0	1	1	1
	1	0	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
RH1	1	0	-	-	1	1	1	1	0	0	1	0
	1	1	-	-	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
RH2	1	0	-	-	1	1	1	1	0	0	1	0
	1	0	1	0	0	-	1	1	1	1	1	1
	0	-	1	1	0	0	-	0	-	1	1	1
RH3	1	1	1	1	1	1	1	0	1	0	1	0
	1	0	1	0	0	-	0	-	-	-	1	1
	1	1	1	1	1	1	1	1	1	0	1	0
RH4	1	1	1	1	1	1	1	-	-	1	0	1
	1	0	1	0	1	1	0	-	-	-	1	1
	0	-	1	0	1	1	1	1	1	0	1	0
RH5	1	0	-	-	1	1	1	1	0	0	0	1
	1	0	0	1	1	1	1	1	0	-	1	1
	1	1	1	0	1	1	1	1	1	0	1	0

Rhodopis first generation: non-conditional-absence coding

RH0	1	1	1	1	1	1	1	1	0	1	1	1
	1	0	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
RH1	1	0	0	0	1	1	1	1	0	0	1	0
	1	1	0	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
RH2	1	0	0	0	1	1	1	1	0	0	1	0
	1	0	1	0	0	0	1	1	1	1	1	1
	0	0	1	1	0	0	0	0	0	1	1	1
RH3	1	1	1	1	1	1	1	0	1	0	1	0
	1	0	1	0	0	0	0	0	0	0	1	1
	1	1	1	1	1	1	1	1	1	0	1	0
RH4	1	1	1	1	1	1	1	0	0	1	0	1
	1	0	1	0	1	1	0	0	0	0	1	1
	0	0	1	0	1	1	1	1	1	0	1	0
RH5	1	0	0	0	1	1	1	1	0	0	0	1
	1	0	0	1	1	1	1	1	1	0	1	1
	1	1	1	0	1	1	1	1	1	0	1	0

Rhodopis second generation: list of characters

Character 1. Hero's name is Rhodopis: absent [0]; present [1]

Character 2. Villain: absent [0]; present [1]

Character 3. Villain is the pirates: absent [0]; present [1]

Character 4. Villain is the old man: absent [0]; present [1]

Character 5. False hero are the servants: absent [0]; present [1]

Character 6. 7a: Heroine is a slave: absent [0]; present [1]

Character 7. Reason for 7a: Heroine's appearance: absent [0]; present [1]

Character 8. A: Villainy: absent [0]; present [1]

Character 9. A: Heroine is Kidnapped: absent [0]; present [1]

Character 10. A: Kidnapped by pirates: absent [0]; present [1]

Character 11. A: Kidnapped by old man: absent [0]; present [1]

Character 12. Heroine is physically different from other slaves: absent [0]; present [1]

Character 13. Blond hair, green eyes: absent [0]; present [1]

Character 14. Light skin: absent [0]; present [1]

Character 15. F: magical agent: absent [0]; present [1]

Character 16. F: shoes: absent [0]; present [1]

Character 17. F by old man: absent [0]; present [1]

Character 18. Reason for F: old man sees her dancing: absent [0]; present [1]

Character 19. Shoes are golden/with gold: absent [0]; present [1]

Character 20. Shoes are rose: absent [0]; present [1]

Character 21. Meeting place is ball: absent [0]; present [1]

Character 22. Ball is organised by old man: absent [0]; present [1]

Character 23. Ball is organised by pharaoh: absent [0]; present [1]

Character 24. G-: Heroine goes to the meeting place: absent [0]; present [1]

Character 25. G-: Heroine is prevented by slaves: absent [0]; present [1]

Character 26. Reason: Slaves are jealous of the slipper: absent [0]; present [1]

Character 27. B: Heroine is dispatched: absent [0]; present [1]

Character 28. B: Heroine goes by river: absent [0]; present [1]

Character 29. D: Encounter with the Donor: absent [0]; present [1]

Character 30. D: Hippo splashes the shoe: absent [0]; present [1]

Character 31. E: reaction to the donor: absent [0]; present [1]

Character 32. E: Heroine puts the shoe to dry: absent [0]; present [1]

Character 33. J: Branding: absent [0]; present [1]

Character 34. J: Lost shoe: absent [0]; present [1]

Character 35. J: shoe flows down the river: absent [0]; present [1]

Character 36. J: shoe is stolen: absent [0]; present [1]

Character 37. J: stolen by eagle: absent [0]; present [1]

Character 38. Eagle is the God Horus: absent [0]; present [1]

Character 39. KF: Pharaoh gets the shoe: absent [0]; present [1]

Character 40. pharaoh is bored: absent [0]; present [1]

Character 41. Ex: hiding place: absent [0]; present [1]

Character 42. M: Difficult task: absent [0]; present [1]

Character 43. M: Shoe test: absent [0]; present [1]

Character 44. N: Solution: absent [0]; present [1]

Character 45. N: shoe fits: absent [0]; present [1]

Character 46. L: false claims: absent [0]; present [1]

Character 47. W: Wedding: absent [0]; present [1]

Rhodopis second generation: conditional-absence coding

RH0	1	1	1	0	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	
RH1	-	1	0	1	1	1	0	1	1	0	1	0
	-	-	1	1	1	1	1	1	1	1	0	1
	1	1	0	-	0	-	-	-	1	1	0	1
	0	-	1	0	0	1	1	1	1	1	1	
RH2	1	1	0	1	1	1	0	1	1	0	1	0
	-	-	1	1	1	1	1	0	1	0	1	1
	1	0	1	1	1	1	1	1	1	1	0	1
	1	0	1	1	0	1	1	1	1	1	1	
RH3	-	0	-	-	1	1	-	0	-	-	-	1
	0	1	1	1	1	0	0	1	1	-	-	1
	1	0	1	1	0	-	-	-	1	1	1	0
	-	-	1	0	1	1	1	1	1	0	1	
RH4	1	1	1	0	1	1	1	1	1	1	0	1
	1	0	1	1	1	1	0	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	
RH5	-	1	1	0	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	0	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	

Rhodopis second generation: non-conditional absence coding

RH0	1	1	1	0	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	

RH1	0	1	0	1	1	1	0	1	1	0	1	0
	0	0	1	1	1	1	1	1	1	1	0	1
	1	1	0	0	0	0	0	0	1	1	0	1
	0	0	1	0	0	1	1	1	1	1	1	

RH2	1	1	0	1	1	1	0	1	1	0	1	0
	0	0	1	1	1	1	1	0	1	0	1	1
	1	0	1	1	1	1	1	1	1	1	0	1
	1	0	1	1	0	1	1	1	1	1	1	

RH3	0	0	0	0	1	1	0	1	0	0	0	1
	0	1	1	1	1	0	0	1	1	0	0	1
	1	0	1	1	0	0	0	0	1	1	1	0
	0	0	1	0	1	1	1	1	1	0	1	

RH4	1	1	1	0	1	1	1	1	1	1	0	1
	1	0	1	1	1	1	0	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	

RH5	0	1	1	0	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	0	1	1	0	1	1
	1	1	1	1	1	1	1	1	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	

Shen Hsien first generation: List of characters

Character 1. Girl is called Shen Hsien: absent [0]; present [1]

Character 2. Father is a King: absent [0]; present [1]

Character 3. Absenteeism: absent [0]; present [1]

Character 4. Death of parents: absent [0]; present [1]

Character 5. Father dies: absent [0]; present [1]

Character 6. Mother dies: absent [0]; present [1]

Character 7. Villain is Stepmother: absent [0]; present [1]

Character 8. Order: absent [0]; present [1]

Character 9. Task: collecting water [0]; chores [1]

Character 10. Task: doing chores: absent [0]; present [1]

Character 11. D: Heroine finds a fish: absent [0]; present [1]

Character 12. She puts it in a pond

Character 13. Fish appears only to the girl: absent [0]; present [1]

Character 14. Villain doubts the girl is hiding something: absent [0]; present [1]

Character 15. Trickery: absent [0]; present [1]

Character 16. Trickery: Villain sends Heroine away to wash a coat: absent [0]; present [1]

Character 17. Disguise: coat: absent [0]; present [1]

Character 18. A: Villainy: absent [0]; present [1]

Character 19. A: Villain kills the fish: absent [0]; present [1]

Character 20. Villain keeps the bones: absent [0]; present [1]

Character 21. B: Heroine is dispatched (by getting to know what happened): absent [0]; present [1]

Character 22. Condition: putting under her bed: absent [0]; present [1]

Character 23. G: Heroine goes to the ball: absent [0]; present [1]

Character 24. I: Heroine meets the Prince: absent [0]; present [1]

Character 25. H: Heroine is recognised: absent [0]; present [1]

Character 26. H:by stepsister: absent [0]; present [1]

Character 27. H: by stepmother: absent [0]; present [1]

Character 28. J: Branding: absent [0]; present [1]

Character 29. J: Lost shoe: absent [0]; present [1]

Character 30. KF: shoe found by chance: absent [0]; present [1]

Character 31. W: Wedding: absent [0]; present [1]

Character 32. U: Villain nemesis: absent [0]; present [1]

Character 33. U: by falling rocks: absent [0]; present [1]

Shen Hsien first generation: conditional-absence coding


```
SH0   1   1   1   1   1   1   1   1   1   0   1   1
      1   0   1   0   1   1   1   1   1   0   1   0
      1   1   0   1   1   1   1   1   1

SH1   -   1   1   1   1   0   1   1   1   0   1   0
      1   0   1   0   1   1   1   1   1   1   1   1
      1   1   0   1   1   1   1   1   -

SH2   -   1   1   1   1   0   1   1   1   0   1   0
      1   0   1   0   1   1   1   1   1   1   1   1
      0   -   -   1   1   0   0   1   -

SH3   1   0   1   1   1   1   1   0   -   -   1   1
      0   0   1   1   0   1   1   1   1   0   1   0
      1   1   1   1   1   1   1   1   1
```

SH4 1 0 1 1 1 0 1 1 0 1 1 0
     0 1 1 1 1 1 1 0 1 0 1 0
     1 1 0 1 1 1 1 1 1

SH5 1 0 0 0 - - 1 0 - - 1 1
     0 1 1 0 1 1 1 0 1 0 1 1
     0 - - 0 - - 1 1 1

Shen Hsien first generation: non-conditional-absence coding

SH0 1 1 1 1 1 1 1 1 1 0 1 1
     1 0 1 0 1 1 1 1 1 0 1 0
     1 1 0 1 1 1 1 1 1

SH1 0 1 1 1 1 0 1 1 1 0 1 0
     1 0 1 0 1 1 1 1 1 1 1 1
     1 1 0 1 1 1 1 1 0

SH2 0 1 1 1 1 0 1 1 1 0 1 0
     1 0 1 0 1 1 1 1 1 1 1 1
     0 0 0 1 1 0 0 1 0

SH3 1 0 1 1 1 1 1 0 0 0 1 1
     0 0 1 1 0 1 1 1 1 0 1 0
     1 1 1 1 1 1 1 1 1

SH4 1 0 1 1 1 0 1 1 1 1 1 0
     0 1 1 1 1 1 1 0 1 0 1 0
     1 1 0 1 1 1 1 1 1

SH5 1 0 0 0 0 0 1 0 0 0 1 1
     0 1 1 0 1 1 1 0 1 0 1 1
     0 0 0 0 0 0 1 1 1

Shen Hsien second generation: list of characters states

Character 1. Father is a king: absent [0]; present [1]

 Character 2. Absenteeism: absent [0]; present [1]

Character 3. Death of parents: absent [0]; present [1]

Character 4. Death of parents: Mother [0]; father [1]

Character 5. Villain: absent [0]; present [1]

Character 6. Stepmother is villain: absent [0]; present [1]

Character 7. Order: absent [0]; present [1]

Character 8. Collecting water [0]; panning for gold [1]

Character 9. Heroine finds a fish: absent [0]; present [1]

Character 10. Eyes are golden: absent [0]; present [1]

Character 11. Eyes are red: absent [0]; present [1]

Character 12. Reconnaissance: absent [0]; present [1]

Character 13. Delivery: Villain knows about the fish: absent [0]; present [1]

Character 14. Villainy: absent [0]; present [1]

Character 15. A2a: Villain kills the fish: absent [0]; present [1]

Character 16. with a dagger: absent [0]; present [1]

Character 17. Trickery: absent [0]; present [1]

Character 18. Trickery: using coat as disguise: absent [0]; present [1]

Character 19. B: a man says bones are magical: absent [0]; present [1]

Character 20. F: Wishes: absent [0]; present [1]

Character 21. shoes that makes no sound: absent [0]; present [1]

Character 22. G: Heroine goes to the meeting place (ball): absent [0]; present [1]

Character 23. the ball is held by cave people: absent [0]; present [1]

Character 24. H: Heroine is recognised: absent [0]; present [1]

Character 25. H: by stepsister: absent [0]; present [1]

Character 26. J: Branding: absent [0]; present [1]

Character 27. J: Lost shoe: absent [0]; present [1]

Character 28. KF: shoe found by chance: absent [0]; present [1]

Character 29. King rustled/tortured the cave men to know where the girl is: absent [0]; present [1]

Character 30. Q: Prince finds the heroine: absent [0]; present [1]

Character 31. W: Wedding: absent [0]; present [1]

Character 32. U: Villain nemesis: absent [0]; present [1]

Character 33. U: by falling rocks: absent [0]; present [1]

Character 34. Bones are used: absent [0]; present [1]

Character 35. Bones are used to stop a rebellion: absent [0]; present [1]

Character 36. Bones are used to get pearls and gold: absent [0]; present [1]

Shen Hsien second generation: conditional absence coding

SH0	1	1	1	1	1	1	1	0	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
SH1	0	1	1	1	1	1	1	1	1	-	-	1
	1	1	1	1	1	0	1	1	-	1	0	0
	-	1	1	1	0	1	1	1	1	0	-	-
SH2	0	0	-	-	1	1	1	1	1	1	0	1
	1	1	1	0	0	-	1	1	0	1	0	1
	-	1	1	1	0	1	1	0	-	1	-	-

SH3	1	1	1	1	1	1	1	0	1	0	1	1
	1	1	1	1	0	-	1	0	-	1	0	1
	1	1	1	1	1	1	1	1	-	1	1	1
SH4	1	1	1	0	1	1	1	0	1	0	1	1
	1	1	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	0	1	1	0
SH5	1	0	-	-	1	1	1	0	1	0	1	1
	1	1	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	0	-	1	0	1

Shen Hsien second generation: non-conditional coding system

SH0	1	1	1	1	1	1	1	0	1	1	0	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
SH1	0	1	0	1	1	1	1	1	1	0	0	1
	1	1	1	1	1	0	1	1	0	1	0	0
	0	1	1	1	0	1	1	1	1	0	0	0
SH2	0	0	0	0	1	1	1	1	1	1	0	1
	1	1	1	0	0	0	1	1	0	1	0	1
	0	1	1	1	0	1	1	0	0	1	0	0
SH3	1	1	0	1	1	1	1	0	1	0	1	1
	1	1	1	1	0	0	1	0	0	1	0	1
	1	1	1	1	1	1	1	1	0	1	1	1
SH4	1	1	1	0	1	1	1	0	1	0	1	1
	1	1	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	0	1	1	0
SH5	1	0	0	0	1	1	1	0	1	0	1	1
	1	1	1	0	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	0	0	1	0	1

Cat Cinderella first generation: List of characters

Character 1. Trickery: absent [0]; present [1]

Characters 2. Trickery: Heroine uses a dress excuse: absent [0]; present [1]

Character 3. Complicity: absent [0]; present [1]

Character 4. Villainy: absent [0]; present [1]

Character 5. Villainy: Heroine kills the Stepmother: absent [0]; present [1]

Character 6. with the help of the governess: absent [0]; present [1]

Character 7. reason: she doesn't want the father to marry her [0]; she does not like cause she is mean [1]

Character 8. 7a: Menial heroine: absent [0]; present [1]

Character 9. 7a: she becomes Cinderella: absent [0]; present [1]

Character 10. Stepmother brings six children: absent [0]; present [1]

Character 11. -> Father leaves: absent [0]; present [1]

Character 12. Heroine says: if you forget you won't be able to come back: absent [0]; present [1]

Character 13. D: Father asks what the daughters want: absent [0]; present [1]

Character 14. E: Heroine says what she wants: absent [0]; present [1]

Character 15. Father forgets: absent [0]; present [1]

Character 16. Father cannot leave: absent [0]; present [1]

Character 17. Captain dreams reason why: absent [0]; present [1]

Character 18. F: magical agents: absent [0]; present [1]

Character 19. G: Heroine goes to ball: absent [0]; present [1]

Character 20. I: Heroine meets the king: absent [0]; present [1]

Character 21. Pr: Heroine is chased: absent [0]; present [1]

Character 22. Rs. Rescue: absent [0]; present [1]

Character 23. Rs1: Heroine throws money to purchasers: absent [0]; present [1]

Character 24. J: Branding: absent [0]; present [1]

Character 25. J: Lost shoe: absent [0]; present [1]

Character 26. M: Difficult task: absent [0]; present [1]

Character 27. M: Shoe test: absent [0]; present [1]

Character 28. N: Shoe fits: absent [0]; present [1]

Character 29. Q: Recognition: absent [0]; present [1]

Character 30. L: Claims: absent [0]; present [1]

Character 31. W: Wedding: absent [0]; present [1]

Character 32. Hero is a princess: absent [0]; present [1]

Character 33. Father is a Prince: absent [0]; present [1]

Character 34. heroine's name: Zezolla [0] /Zollo [1]

Character 35. f1: Hoe: absent [0]; present [1]

Character 36. f1: Tree: absent [0]; present [1]

Character 37. Tree is a date tree: absent [0]; present [1]

Character 38. She is wearing a dress: absent [0]; present [1]

Cat Cinderella first generation: conditional-absence coding for characters states

CC0 1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 0 1 1
      1 1

CC1 1 1 1 1 1 0 0 1 0 1 0 -
      0 - 0 0 0 1 1 1 1 1 1 1
      1 0 - - 1 0 1 1 1 0 1 1
      - 0

CC2 0 - - 1 1 1 0 1 0 1 1 0
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 0 1 1
      - 0

CC3 1 1 1 1 1 0 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 0 1 1 1 1 0 1
      - 1

CC4 1 1 1 1 1 1 1 1 1 0 1 0
      1 1 1 1 0 1 1 1 1 1 1 1
      1 1 1 1 1 0 1 0 0 1 0 1
      1 1

CC5 1 1 1 1 1 0 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 0 1 0 0 1 0 1
      1 1

Cat Cinderella first generation: non-conditional absence coding for characters states

CC0 1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 0 1 1
      1 1

CC1 1 1 1 1 1 0 0 1 0 1 0 0
      0 0 0 0 0 1 1 1 1 1 1 1
      1 0 0 0 1 0 1 1 1 0 1 1
      0 0

CC2 0 0 0 1 1 1 0 1 0 1 1 0
      1 1 1 1 1 1 1 1 1 1 1 1
      1 1 1 1 1 1 1 1 1 0 1 1
      0 0

CC3	1	1	1	1	1	0	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	0	1	1	1	1	0	1
	0	1										
CC4	1	1	1	1	1	1	1	1	1	0	1	0
	1	1	1	1	0	1	1	1	1	1	1	1
	1	1	1	1	1	0	1	0	0	1	0	1
	1	1										
CC5	1	1	1	1	1	0	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	0	1	0	0	1	0	1
	1	1										

Cat Cinderella second generation: list of characters states

Character 1. Absenteeism: absent [0]; present [1]

Character 2. Death of parents: absent [0]; present [1]

Character 3. Mother dies: absent [0]; present [1]

Character 4. Villain: absent [0]; present [1]

Character 5. Villain is the Stepmother absent [0]; present [1]

Character 6. False hero is the Stepdaughters: absent [0]; present [1]

Character 7. Heroine's name is Susanne: absent [0]; present [1]

Character 8. Trickery: absent [0]; present [1]

Character 9. Trickery: dress excuse: absent [0]; present [1]

Character 10. Complicity: absent [0]; present [1]

Character 11. A: Villainy: absent [0]; present [1]

Character 12. A: Heroine kills the Stepmother: absent [0]; present [1]

Character 13. A: Villainy reason: Governess marries the father/She dislike the stepmother: absent [0]; present [1]

Character 14. 7a. Menial heroine: absent [0]; present [1]

Character 15. Heroine becomes Cat Cinderella: absent [0]; present [1]

Character 16. B: Heroine is dispatched: absent [0]; present [1]

Character 17. B4: Prophecy of the Dove: absent [0]; present [1]

Character 18. -->Father leaves: absent [0]; present [1]

Character 19. Father goes to Sardinia: absent [0]; present [1]

Character 20. D: Father asks what the daughters want: absent [0]; present [1]

Character 21. E: Heroine replies: absent [0]; present [1]

Character 22. E: Heroine says: "to speak to the fairies" [0]; "nothing" [1]; "not to forget her" [2]

Character 23. 5. Father forgets and he is not allowed to return: absent [0]; present [1]

Character 24. 5. Father visits fairies to receive gifts: absent [0]; present [1]

Character 25. F: magical object: absent [0]; present [1]

Character 26. F: hoe/shovel: absent [0]; present [1]

Character 27. F: Bucket: absent [0]; present [1]

Character 28. F: Water: absent [0]; present [1]

Character 29. F: Tree: absent [0]; present [1]

Character 30. F: Fairy being: absent [0]; present [1]

Character 31. G: Heroine goes to the meeting place (ball): absent [0]; present [1]

Character 32. R: Return: absent [0]; present [1]

Character 33. R: Return from ball: three times [0]; once [1]

Character 34. Pr: Heroine is chased: absent [0]; present [1]

Character 35. J: Branding: absent [0]; present [1]

Character 36. J. Lost shoe: absent [0]; present [1]

Character 37. M: Difficult task: absent [0]; present [1]

Character 38. M: shoe test: absent [0]; present [1]

Character 39. N: Solution: absent [0]; present [1]

Character 40. N: Shoe fits: absent [0]; present [1]

Character 41. Q: Heroine is found: absent [0]; present [1]

Character 42. W: Wedding: absent [0]; present [1]

Cat Cinderella second generation: conditional-absence coding

CC0	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	0	1	1
	1	1	1	0	1	1	1	1	0	1	1	1
	1	1	1	1	1	1						
CC1	0	-	-	1	1	1	0	1	1	1	1	1
	1	1	0	0	-	0	-	0	-	-	0	0
	1	1	1	0	1	1	1	1	1	1	1	1
	0	-	-	-	1	1						
CC2	0	-	-	1	1	1	0	1	1	1	1	1
	1	1	1	0	-	1	0	1	1	0	1	1
	1	0	0	0	1	1	1	1	1	1	1	1
	0	-	-	-	1	1						
CC3	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	0	1	0	1	1	1	1	1	0	1	1
	0	-	-	-	0	0						
CC4	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	0	1	1	1	1	1	1	1	1	1
	1	1	0	1	1	1	1	1	0	0	1	1
	0	-	-	-	1	1						

CC5	0	-	-	1	1	1	1	1	1	1	1	1
	1	1	0	0	-	1	1	1	1	2	1	1
	1	0	0	1	1	1	1	1	0	0	1	1
	1	1	1	1	1	1						

Cat Cinderella second generation: non-conditional-absence coding

CC0	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	0	1	1
	1	1	1	0	1	1	1	1	0	1	1	1
	1	1	1	1	1	1						

CC1	0	0	0	1	1	1	0	1	1	1	1	1
	1	1	0	0	0	0	0	0	0	0	0	0
	1	1	1	0	1	1	1	1	1	1	1	1
	0	0	0	0	1	1						

CC2	0	0	0	1	1	1	0	1	1	1	1	1
	1	1	1	0	0	1	0	1	1	0	1	1
	1	0	0	0	1	1	1	1	1	1	1	1
	0	0	0	0	1	1						

CC3	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	1	1	1	1	1	1	1	1	1	1
	1	0	1	0	1	1	1	1	1	0	1	1
	0	0	0	0	0	0						

CC4	1	1	1	1	1	1	1	1	1	1	1	1
	1	1	0	1	1	1	1	1	1	1	1	1
	1	1	0	1	1	1	1	1	0	0	1	1
	0	0	0	0	1	1						

CC5	0	0	0	1	1	1	1	1	1	1	1	1
	1	1	0	0	0	1	1	1	1	2	1	1
	1	0	0	1	1	1	1	1	0	0	1	1
	1	1	1	1	1	1						

APPENDIX 2

List of 237 characters and their coded state in 266 variants of Cinderella tale.

Character 1	Aa327b: absent [0]; present [1]
Character 2	Hero is a: Female [0]; Male [1]; Male & Female [2]
Character 3	Hero is a step-kid: absent [0]; present [1]
Character 4	False Hero: absent [0]; present [1]
Character 5	False Hero: sister/s [0]; stepsister/s [1]; unrelated girl [2]; sisters & stepsisters [3]
Character 6	Villain: absent [0]; present [1]
Character 7	Type of Villain: father [0]; brother [1]; Stepmother [2]; Mother [3]; Queen [4]; sisters [5]; parents [6]; cousins [7]; aunt [8]
Character 8	Absentation: absent [0]; present [1]
Character 9	Absentation of youngsters: absent [0]; present [1]
Character 10	reason: taking king's palace: absent [0]; present [1]
Character 11	Death of parents: absent [0]; present [1]
Character 12	Death of parents (who): Mother [0]; Father [1]; both [2]
Character 13	Death bed promise: absent [0]; present [1]
Character 14	Death bed Test: absent [0]; present [1]
Character 15	Interdiction: absent [0]; present [1]
Character 16	Type of Interdiction: drop spindle [0]; eat [1]; drink [2],
Character 17	Interdiction is violated: absent [0]; present [1]
Character 18	by: hero [0]; mother/brother [1]
Character 19	Order: absent [0]; present [1]
Character 20	Type of Order: Heroine has to mind animal: absent [0]; present [1]
Character 21	Type of Order: Spinning Task: absent [0]; present [1]
Character 22	Spinning by: animal [0]; non-animal Donor [1]
Character 23	Starvation: absent [0]; present [1]
Character 24	Food provided: absent [0]; present [1]
Character 25	by Ear cornucopia: absent [0]; present [1]
Character 26	by cow [0]; goat [1]
Character 27	Competition between Hero and Stepsister: absent [0]; present [1]
Character 28	Trickery: absent [0]; present [1]
Character 29	Type of Trickery: Hero is sent away to catch water: absent [0]; present [1]
Character 30	Type of Trickery: Feign illness: absent [0]; present [1]
Character 31	Type of Trickery: Villain trick the mother to pass between her legs: absent [0]; present [1]
Character 32	Type of Trickery: Villain persuades H to kill her mother/SM: absent [0]; present [1]
Character 33	Type of Trickery: Villain persuades heroine to convince father to marry her or convince father to marry her
Character 34	Complicity: absent [0]; present [1]
Character 35	Heroine catches a fish: absent [0]; present [1]
Character 36	7a: Ill-treated heroine at home: absent [0]; present [1]
Character 37	Type of 7a: Abode: absent [0]; present [1]
Character 38	7a: Type of Abode: hearth [0]; pig sty [1]; stable [2]
Character 39	Heroine goes to the mother's grave: absent [0]; present [1]
Character 40	Reconnaissance: absent [0]; present [1]
Character 41	Type of Reconnaissance: Villain tries to find a wife: absent [0]; present [1]

Character 42	Type of Reconnaissance: Villain asks questions to daughters: absent [0]; present [1]
Character 43	Questions: How much they love him [0]; what they want as gift [1]; what they dreamed [2]
Character 44	Type of Reconnaissance: Heroine is spied: absent [0]; present [1]
Character 45	by: stepsisters/sister [0]; SM [1]; man [2]; parents [3]; henwife's daughter [4]; maid [5]
Character 46	Spied by Taste of food: absent [0]; present [1]
Character 47	Heroine puts them to sleep: absent [0]; present [1]
Character 48	by hairdressing [0]; magic formula [1]; fairy [2]
Character 49	Delivery: absent [0]; present [1]
Character 50	Type of Delivery: Hero fulfil the test or say yes: absent [0]; present [1]
Character 51	Type of Delivery: "Loving like salt": absent [0]; present [1]
Character 52	Type of Delivery: hidden eye: absent [0]; present [1]
Character 53	Type of Delivery: magic object: absent [0]; present [1]
Character 54	Type of Delivery: mother's grave: absent [0]; present [1]
Character 55	Type of Delivery: Helpful animal: absent [0]; present [1]
Character 56	A: Villainy: absent [0]; present [1]
Character 57	A: Order to kill the hero: absent [0]; present [1]
Character 58	bring back parts of the hero: absent [0]; present [1]
Character 59	A: Forced matrimony: absent [0]; present [1]
Character 60	A: [Mother] is turned into an animal: absent [0]; present [1]
Character 61	A: Heroine is banished: absent [0]; present [1]
Character 62	A: Heroine is shut up: absent [0]; present [1]
Character 63	A: order to kill the animal: absent [0]; present [1]
Character 64	A: [Mother] is killed: absent [0]; present [1]
Character 65	A: Forcible seizure of the magical helper: absent [0]; present [1]
Character 66	A: false substitution with spell: absent [0]; present [1]
Character 67	A: Heroine is robbed of the magical agent: absent [0]; present [1]
Character 68	Heroine is sparred: absent [0]; present [1]
Character 69	How: Tricks to delude the Villain: sheep heart [0]; dog heart [1]; bitch [2]; hare heart [3]; horse heart [4]
Character 70	I2: Hero kills the villain: absent [0]; present [1]
Character 71	Heroine's flight/escape: absent [0]; present [1]
Character 72	Tricks to escape: absent [0]; present [1]
Character 73	Type of tricks to escape: bird splashing [0]; bear [1]; bed on the well [2]; goat to string [3]; talking stings [4]; spittle [5]; light before [6]
Character 74	with the Helpful animal: absent [0]; present [1]
Character 75	in metal forest: absent [0]; present [1]
Character 76	D: encounter with the Donor: absent [0]; present [1]
Character 77	E: reaction to the Donor: absent [0]; present [1]
Character 78	D7: Taboo: absent [0]; present [1]
Character 79	D7: not to touch anything [0]; not to speak [1]
Character 80	E7-: Breaking taboo: absent [0]; present [1]
Character 81	D9: x3 Helpful Animal fights against monsters: absent [0]; present [1]
Character 82	E9: Helpful Animal wins: absent [0]; present [1]
Character 83	E9-: Helpful Animal is killed: absent [0]; present [1]
Character 84	f: parts of the bull [leaves, ears]: absent [0]; present [1]
Character 85	one time [0]; two [1]; three [2],
Character 86	D: working for her: absent [0]; present [1]

Character 87	D: promise children: absent [0]; present [1]
Character 88	D: hearing her story: absent [0]; present [1]
Character 89	D: Knocking a hill: absent [0]; present [1]
Character 90	D: asks for drink/eat: absent [0]; present [1]
Character 91	D: pig asks to have trough removed: absent [0]; present [1]
Character 92	D: sheep to be sworn: absent [0]; present [1]
Character 93	D: cow to be milked: absent [0]; present [1]
Character 94	D: old man to be helped: absent [0]; present [1]
Character 95	D: take bread out of oven: absent [0]; present [1]
Character 96	D: asks to be freed: absent [0]; present [1]
Character 97	D: fetch pumpkin, rats etc: absent [0]; present [1]
Character 98	D: asked to be killed: absent [0]; present [1]
Character 99	D: Donor asks to be married: absent [0]; present [1]
Character 100	Father departs: absent [0]; present [1]
Character 101	D2: interrogation: absent [0]; present [1]
Character 102	E2: Heroine says what she wants [greetings]: absent [0]; present [1]
Character 103	D3: washing entrails/or to put the hand in it: absent [0]; present [1]
Character 104	D3: Eating taboo: absent [0]; present [1]
Character 105	D3: bury the bones: absent [0]; present [1]
Character 106	of the mother [0]; helpful Animal [1]; mother-animal [2]
Character 107	f1: Heroine receives magical object: absent [0]; present [1]
Character 108	f1: hiding box: absent [0]; present [1]
Character 109	f1: three grains of linseed: absent [0]; present [1]
Character 110	f1: disguise: absent [0]; present [1]
Character 111	f1: nuts and/or almonds [0]: absent [0]; present [1]
Character 112	f1: staff/stick: absent [0]; present [1]
Character 113	f1: wand: absent [0]; present [1]
Character 114	f1: pomegranate: absent [0]; present [1]
Character 115	f1: twig/branch: absent [0]; present [1]
Character 116	f1: red calf: absent [0]; present [1]
Character 117	f1: inheritance [dog]: absent [0]; present [1]
Character 118	f1: Kerchief: absent [0]; present [1]
Character 119	f1: clue of yarn: absent [0]; present [1]
Character 120	f1: bird: absent [0]; present [1]
Character 121	f1: bottle: absent [0]; present [1]
Character 122	f1: Magic food producing cloth: absent [0]; present [1]
Character 123	f1: transformation of pumpkin rats, caterpillar: absent [0]; present [1]
Character 124	f1: gold keys: absent [0]; present [1]
Character 125	Heroine loses f1: absent [0]; present [1]
Character 126	Hero follows f1: absent [0]; present [1]
Character 127	Hero arrives to Devi or similar being house: absent [0]; present [1]
Character 128	D: series of tasks: absent [0]; present [1]
Character 129	reward for the tasks: absent [0]; present [1]
Character 130	False Hero departs: absent [0]; present [1]
Character 131	E- [Negative reaction to Donor]: absent [0]; present [1]
Character 132	F- [magical agent not received]: absent [0]; present [1]
Character 133	Punishment: absent [0]; present [1]
Character 134	f5: heroine finds the object inside animal: absent [0]; present [1]

Character 135	Type of f5: golden ball [0]; apple [1]; wand [2]; grain [3]; drops of blood [4]
Character 136	Heroine strikes the staff/wand: absent [0]; present [1]
Character 137	Against: pig-sty wall [0]; treasure tree [1]; Helpful Animal [2]; well [3]; bones [4]
Character 138	a: LACK or desire
Character 139	Type of a: Ball [0]; preventing going to try the shoe [1]
Character 140	D: Villain gives a task to prevent her going meeting place: absent [0]; present [1]
Character 141	Task is: sorting grain [0]; cooking [1]; gathering peas from ashes [2]; mind the house [3]; recovering something [4]; watching a tree [5]; stealing from prince [6]
Character 142	F9: Task is performed by: helpful animal [0]; human helper [1]; supernatural helper [2]; by sweeping crosswise [3]
Character 143	Helpful animal are birds: absent [0]; present [1]
Character 144	F: magical agent: absent [0]; present [1]
Character 145	by Villain: absent [0]; present [1]
Character 146	by Donor: absent [0]; present [1]
Character 147	by Object received: absent [0]; present [1]
Character 148	by Helpful Animal: absent [0]; present [1]
Character 149	by Grave: absent [0]; present [1]
Character 150	by bones or remaining: absent [0]; present [1]
Character 151	by object in the animal: absent [0]; present [1]
Character 152	by Tree: absent [0]; present [1]
Character 153	by Rock: absent [0]; present [1]
Character 154	F: Food: absent [0]; present [1]
Character 155	F: magical fruits/bells: absent [0]; present [1]
Character 156	F: magic dresses and/or shoes: absent [0]; present [1]
Character 157	Heroine goes to palace: absent [0]; present [1]
Character 158	B: Dispatched by D: absent [0]; present [1]
Character 159	G: Heroine reached on her own: absent [0]; present [1]
Character 160	G: Heroine is found and brought: absent [0]; present [1]
Character 161	Where: tree [0] forest [1] sea/river [2] somewhere [3]
Character 162	by: prince/princes [0]; king's servant [1]; herd [2]; children [3]; gentleman [4]; magician [5]
Character 163	The person who found the heroine is hunting: absent [0]; present [1]
Character 164	G: Heroine is sold: absent [0]; present [1]
Character 165	G: Heroine is led: absent [0]; present [1]
Character 166	G: Route is shown: absent [0]; present [1]
Character 167	O: Menial heroine at palace: absent [0]; present [1]
Character 168	K: Heroine is discovered: absent [0]; present [1]
Character 169	spying through the keyhole: absent [0]; present [1]
Character 170	surprise encounter: absent [0]; present [1]
Character 171	Prince departs: absent [0]; present [1]
Character 172	A: Heroine is made disappear: absent [0]; present [1]
Character 173	Prince Return: absent [0]; present [1]
Character 174	G: H. goes to meeting place: absent [0]; present [1]
Character 175	B: Dispatched by D: absent [0]; present [1]
Character 176	G: Heroine goes to meeting place by: carried by carriage, horses etc..: absent [0]; present [1]
Character 177	Type of place: fete [0]; ball [1]; church [2]; wedding [3]; sermon [4]; feast or festival [5]; somewhere minding sheep [6]; King house [7]; river [8]; garden [9]
Character 178	Token object thrown: absent [0]; present [1]
Character 179	Token object named: absent [0]; present [1]

Character 180	Return (from the meeting place): absent [0]; present [1]
Character 181	Number of times: Three-fold flight [0]; two-fold flight [1]; one-fold flight [2]; six times [3]; four times [4]
Character 182	By "light before"[0]; mist [1]; magic formula [2]
Character 183	Pursuit: hero is pursuit: absent [0]; present [1]
Character 184	Type of Pursuit: bird says the hero will be killed: absent [0]; present [1]
Character 185	Type of Pursuit: Buildings are taken down: absent [0]; present [1]
Character 186	by King [0]; by king's guards [1]
Character 187	Rescue: Hero escapes: absent [0]; present [1]
Character 188	Rescue [through the air] [0]; Rescues [by throwing objects] [1]; Rescue [by cunning] [2]
Character 189	H-I: battle with a dragon/monster: absent [0]; present [1]
Character 190	J: Branding: absent [0]; present [1]
Character 191	J: Heroine loses or receives: Lost shoe [0]; ring [1]; jewel [2]; shoe + ring [3]; glove [4]; trophy from princess [5]; hair [6]
Character 192	Object transported by animal[bird]: absent [0]; present [1]
Character 193	Prince gets the shoe: absent [0]; present [1]
Character 194	By finding [0]; pitch [1]; treading off [2]; chance [3]
Character 195	Shoe is: gold [0]; glass [1]; diamond [2]; silver [3]; smallest [4]; satin [5]; light [6]; blue satin [7]
Character 196	o: unrecognizable arrival: absent [0]; present [1]
Character 197	Donor is transformed in a prince: absent [0]; present [1]
Character 198	L: Claim: absent [0]; present [1]
Character 199	V claims H is not there/does not exist/too dirty to be seen: absent [0]; present [1]
Character 200	False hero pretends shoes fit-FALSE BRIDE: absent [0]; present [1]
Character 201	Mutilated foot: absent [0]; present [1]
Character 202	M: Difficult task: absent [0]; present [1]
Character 203	M: ring test: absent [0]; present [1]
Character 204	M: Shoe test: absent [0]; present [1]
Character 205	M: trophy marriage test: absent [0]; present [1]
Character 206	M: find the princess on the mountain: absent [0]; present [1]
Character 207	M: picking fruit: absent [0]; present [1]
Character 208	M: prepares food: absent [0]; present [1]
Character 209	N: Solution of the task: absent [0]; present [1]
Character 210	N: He shows the trophy: absent [0]; present [1]
Character 211	N: He finds the princess: absent [0]; present [1]
Character 212	N: only heroine can pick the fruits: absent [0]; present [1]
Character 213	N: Shoe fits: absent [0]; present [1]
Character 214	N: Heroine puts object in the food/or a device that resembles the object: absent [0]; present [1]
Character 215	N: Ring recognition: absent [0]; present [1]
Character 216	love sick prince: absent [0]; present [1]
Character 217	A: Villain puts Hero in the tub/or shut up: absent [0]; present [1]
Character 218	Stepsister takes her place in the tub: absent [0]; present [1]
Character 219	Hero gives sisters/father flowers and box/objects: absent [0]; present [1]
Character 220	Exposure of the false hero: absent [0]; present [1]
Character 221	Exposure: Heroine under trough/tub/hided: absent [0]; present [1]
Character 222	by Animal witness: absent [0]; present [1]
Character 223	Animal witness is a: dog [0]; bird [1]; cat [2]
Character 224	Transfiguration: absent [0]; present [1]

Character 225	by dress: absent [0]; present [1]
Character 226	With the help of the helper/magical object: absent [0]; present [1]
Character 227	of the Donor: absent [0]; present [1]
Character 228	K: Liquidation of starvation/property thanks to magical agent [tree that provides food or riches]: absent [0]; present [1]
Character 229	W: Wedding: absent [0]; present [1]
Character 230	reward of the helper-donor: absent [0]; present [1]
Character 231	U: Villain nemesis: absent [0]; present [1]
Character 232	U-: Villain is forgiven: absent [0]; present [1]
Character 233	value of salt: absent [0]; present [1]
Character 234	father returns and found corpse: absent [0]; present [1]
Character 235	X: Hero is killed: absent [0]; present [1]
Character 236	Aa403: absent [0]; present [1]
Character 237	Aa500: absent [0]; present [1]

Data Matrix of characters states per each of 237 Cinderella tale variants

```
Bi131_Sla 0    0    0    0    -    1    0    1    0    -    1    0
          1    0    0    -    -    -    0    -    -    -    0    0
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          -    -    0    1    1    0    -    0    -    -    0    -
          1    1    -    0    0    0    0    1    0    -    1    0
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          0    0    0    0    -    -    -    -    -    -    -    -
          -    -    -    -    -    -    -    -    -    -    -    -
          -    -    -    0    -    -    -    -    -    -    1    0
          0    1    0    0    0    0    0    0    0    0    0    0
          0    0    0    0    0    0    0    -    -    0    0    0
          0    0    -    0    -    0    -    0    -    -    -    1
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          0    0    0    1    1    -    -    -    -    1    -    1
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Bi132_Sla 0    0    0    0    -    1    0    1    0    -    1    0
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Bi133_Sla 0    0    0    0    -    1    0    1    0    -    1    0
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164

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	-	-	-	-	-	-	-	-	0	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	1	0	-	-	-	0	0	0	1	1
	1	0	0	-	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	-	0	0	0	-	-	-	0	-	-	-	0
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Bi142_lt	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
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	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	1	1	1	1
	0	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Bi143_lt	0	0	0	0	-	1	0	1	0	-	1	0
	1	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
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	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	0	0	-	-	-	0	1	0	1	0
	-	-	0	0	-	1	1	1	0	1	1	1
	0	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	1	0	0
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Bi144_Ru 0	0	0	0	-	1	0	1	0	-	1	0
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-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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1	0	0	0	0	0	-	0	0	0	0	1
1	0	0	1	0	0	1	0	0	0	1	0
-	-	0	0	-	1	0	1	1	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	1	-	1	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi145_Fr 0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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1	0	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	1	1	0
-	-	-	-	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	1	1	1	0	0
1	0	0	0	-	-	0	0	0			

Bi146_Au 0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	3	1	1	1
0	0	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi147_It 0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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1	0	0	0	0	0	-	0	0	0	0	1

167

	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	1	0	0	1
	0	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
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	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi148_lt	0	0	0	0	-	1	0	1	0	-	1	0
	1	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	1
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	0	0	0	0	0	0	0	-	-	0	0	0
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	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	1	0	0	1
	0	-	1	0	0	1	1	1	0	1	2	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	1	0	-	-	0	0	0			
Bi149_lt	0	0	0	0	-	1	0	1	0	-	1	0
	1	3	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	0	1	1	0	0	0	0	0	0	1
	1	0	0	0	-	0	-	-	-	0	0	-
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Bi150_lt	0	0	0	0	-	1	0	1	0	-	1	0
	1	2	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
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	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	1	0	1	0	-	0	0	0	0	0	1	0
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	0	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi151_Sco	0	0	0	1	2	1	0	1	0	-	1	0
	1	4	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0

-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	1
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0	0	0	0	0	0	0	-	-	0	0	0
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1	0	0	1	2	2	0	0	0	0	1	0
-	-	0	0	-	1	0	0	4	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	2	-	1	0	1	0	0	1	1	0	1
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0	0	0	1	0	1	1	1	1	0	0	0
1	0	0	0	-	-	0	0	0			
Bi152_Sco 0	0	0	1	2	1	0	1	0	-	1	0
1	4	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
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-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
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1	-	1	0	0	1	1	-	0	1	0	0
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0	0	0	0	-	-	-	1	1	0	0	0
1	0	0	0	-	-	0	0	0			
Bi153_Ru 0	0	0	0	-	1	0	1	0	-	1	0
0	0	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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-	-	0	0	-	1	0	0	2	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	1	-	1	0	0	-	-	-	0	-	-
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0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			
Bi154_It 0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
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-	-	0	0	-	1	0	0	1	1	1	1
0	-	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1

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1	0	0	1	-	-	0	0	0			

Bi155_It											
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-	-	0	0	-	-	-	-	-	-	0	0
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-	-	-	-	-	-	-	1	0	-	1	0
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-	-	0	0	-	1	0	1	1	1	1	1
0	-	1	0	0	0	1	1	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

Bi156_Fr											
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1	3	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
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0	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

Bi157_It											
0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
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0	-	0	0	-	1	0	0	1	1	1	1
0	-	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	1	1	0	0	0
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Bi158_Alb											
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-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
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-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	1
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	1	2	3	4	5	6	7	8	9	10	11	12
	0	0	-	0	-	0	-	0	-	-	-	1
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	1	0	0	0	-	-	-	1	0	0	0	1
	0	1	1	1	1	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	-	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
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Bi159_It	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	1
	2	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	0	-	0	0	-	1	0	0	1	1	1	1
	0	-	1	0	0	1	1	1	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
Bi160_It	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	0	-	0	0	-	1	0	1	1	0	0	1
	0	-	1	0	0	1	1	1	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Bi161_Ge	0	0	0	0	-	1	0	1	0	-	1	0
	1	3	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	0	-	0	0	-	1	0	0	1	0	0	1
	0	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	1	0
	0	0	0	1	1	-	-	-	-	1	1	0
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi162_Ge	0	0	0	0	-	1	0	1	0	-	1	0
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0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	1	0	0	1	0
1	1	0	0	-	-	0	0	0			

Bi163_Den	0	0	0	0	-	1	0	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			

Bi164_Den	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
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Bi165_lt	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	1
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	0	0	0	0	0	0	0	-	-	0	0	0
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	0	-	0	0	-	1	0	0	1	1	1	1
	0	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	1	0	0	-	-	-	0	-	-

	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	1	1	0	0	0
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Bi166_Gr	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
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	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	0	0	-	-	-	-	-	-	1	0
	0	0	0	0	-	-	0	0	0			
Bi168_It	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	0	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	0	0	0	0	0	0	0	-	-	0	0	0
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	0	0	0	0	-	-	0	0	0			
Bi170_Ir	0	0	0	0	-	1	0	1	0	-	1	0
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	0	0	0	0	1	-	-	-	-	-	1	0
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi171_Ru	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	0	0	-	-	-	0	-	-	-	0
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Bi172_Ru	0	0	0	0	-	1	1	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	0
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	0	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	1	0	0	-	-	-	0	-	-
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Bi173_Pol	0	0	0	0	-	1	0	0	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	1	0	0	-	-	-	1	0	0
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	0	0	0	0	-	-	-	0	-	-	-	0
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Bi174_Sla	0	0	0	0	-	1	0	1	0	-	1	0
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	-	-	0	1	1	0	-	0	-	-	0	-
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	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	1	-	-	0	0	0			
Bi175_Den	0	0	0	0	-	1	0	1	0	-	1	0
	1	4	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0

174

-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	1	1	1	1	1	0	1	1	1	0	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	0	0	-	1	0
0	1	0	0	0	0	0	0	0	0	0	75
0	0	0	0	0	0	0	0	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	0	0	0	-	-	0	0	0	1	0
-	-	0	0	-	1	1	0	1	0	0	1
0	1	1	0	0	0	1	-	0	1	0	0
1	0	-	1	0	1	0	0	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	1	-	-	0	0	0			

Bi176_Gr

0	0	0	0	-	1	0	1	0	-	1	0
1	4	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	0	1	-	0	1	0	0	0	1	0
-	-	0	0	-	1	0	1	3	1	1	1
0	-	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi177_Fr

0	0	0	0	-	1	0	1	0	-	1	0
1	4	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	0	-	-	-	0	0	1
0	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	0	-	-	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	1
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	1	-	-	0	0	0			

Bi178_Spa

0	0	0	0	-	1	0	1	0	-	1	0
1	3	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	1
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	0	8	0	0	0
-	-	0	-	-	-	-	-	0	1	1	0

-	-	-	1	0	0	-	-	-	1	1	0
0	0	0	0	1	-	-	-	-	-	1	1
0	0	0	0	-	-	-	1	1	0	0	0
1	0	0	0	-	-	0	0	0			

Bi179_Spa

0	0	0	0	-	1	0	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	1
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	0	0	-	-	-	1	0	0	1	1
0	1	1	1	1	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	1	1	0
-	-	-	-	0	0	-	-	-	1	1	0
0	0	0	0	1	-	-	-	-	-	1	1
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi181_Den

0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	0	2	0	1	1
0	-	0	-	-	-	-	-	0	1	0	0
1	0	0	1	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi182_Den

0	0	0	0	-	1	0	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	2	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	0	-	1	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi183_It

0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	1
0	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0

0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	0	1	2	0	0	0	0	0	1	0
-	-	0	0	-	1	0	1	1	1	1	1
0	-	1	0	0	0	1	1	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	1	1	0	0	0
1	0	0	0	-	-	0	0	0			

Bi184_Por

0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	0	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	1
1	1	0	0	-	1	0	1	5	1	1	1
0	-	1	0	0	1	1	1	0	0	-	-
-	-	-	1	0	0	-	-	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Bi185_Fr

0	0	0	0	-	1	0	1	0	-	1	0
1	3	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0
-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	1
0	1	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	1	1	0	0	0
1	0	0	1	-	-	0	0	0			

Bi186_It

0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	1
0	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	5	0	0	1
0	-	1	0	0	1	1	1	0	0	-	-
-	-	-	1	0	0	-	-	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

Bi187_It

0	0	0	0	-	1	0	1	0	-	1	0
1	1	0	-	-	-	0	-	-	-	0	0

	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	0	1	0	0	0	0	0	0	0	1
	0	0	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	0	-	-	-	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Bi188_It	0	0	0	0	-	1	0	1	0	-	1	0
	1	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	0	1	2	0	0	0	0	0	-	1
	0	0	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	0	-	-	-	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Bi189_Turk	0	0	0	0	-	1	0	1	0	-	1	
	0	1	2	0	-	-	-	0	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	0
	0	-	-	0	1	1	0	-	0	-	-	0
	-	1	1	-	0	0	0	0	1	0	-	1
	0	0	0	0	0	0	0	0	0	-	0	1
	0	-	0	0	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	-	-	-	-	-	-	1
	1	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	-	-	0	0
	0	0	0	-	0	-	0	-	0	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	-
	-	1	0	0	0	-	-	-	1	0	0	0
	1	1	1	0	0	-	0	-	-	-	0	0
	-	-	-	0	-	-	-	-	-	0	0	-
	-	-	-	-	-	0	0	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	1	0	-	-	0	0	0		
Bi190_Fr	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
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	1	0	1	0	-	-	-	0	0	0	1	1
	1	0	0	0	-	0	-	-	-	0	0	-

	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	0	-	-	-	1	1	0
	0	0	0	1	1	-	-	-	-	1	1	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	1	-	-	0	0	0			
Bi191_Au	0	0	0	0	-	1	0	1	0	-	1	70
	1	3	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	0	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	-	0	0	-	-	-	1	1	0
	0	0	0	1	1	-	-	-	-	1	1	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi192_It	0	0	0	0	-	1	0	1	0	-	1	0
	0	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	0	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	1	0	1	1
	2	-	0	-	-	-	-	-	0	1	1	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi193_Bra	0	0	0	0	-	1	0	1	0	-	1	0
	1	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
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	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	5	1	0	1
	-	-	0	-	-	-	-	-	0	1	2	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi194_Lith	0	0	0	0	-	1	0	1	0	-	1	0
	0	0	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
	0	0	0	0	0	0	0	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
	-	-	-	0	-	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	0	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	2	0	0	1
	0	-	0	-	-	-	-	-	0	1	2	0
	-	-	-	1	0	0	-	-	-	1	0	0
	0	0	0	1	1	-	-	-	-	1	-	1
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi195_Rom	0	0	0	0	-	1	0	1	0	-	1	
	0	0	-	0	-	-	-	0	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	1	0	-	1
	0	0	0	0	0	0	0	0	0	-	0	1
	1	3	0	0	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	-	-	-	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	0	0	0	-	-	0	0
	0	0	0	-	0	-	0	-	0	-	-	-
	1	1	0	0	0	0	0	-	0	0	0	0
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	0	-	-	-	1	0	0	-	-	-	1	0
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	1	0	0	0	0	-	-	-	1	0	0	0
	0	1	0	0	0	-	-	0	0	0		
Bi196_Fr	0	0	0	0	-	1	0	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
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	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	0	0	0	-	-	-	1	0	0
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	1	0	0	-	-	0	0	0			
Bi197_Fi	0	0	0	0	-	1	0	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
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	-	-	-	-	-	-	-	1	0	-	1	0
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	1	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	2	1	1	1
	0	-	0	-	-	-	-	-	0	1	0	0
	1	1	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	1	0	0	0	0
	1	0	0	0	-	-	0	0	0			

Bi198_Fi	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
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	1	0	0	0	0	0	-	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	0	1	1	1
	1	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	1	0	0	-	-	-	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	1	0	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi199_Fi	0	0	0	0	-	1	0	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	1	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	1	0
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	0	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
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	0	0	0	0	0	0	-	1	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	2	1	1	1
	0	-	0	-	-	-	-	-	0	1	1	0
	1	1	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	1	0	0	0	0
	1	0	0	0	-	-	0	0	0			
Bi200_lt	0	0	0	0	-	1	0	1	0	-	1	1
	1	1	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	0	0	-	-	-	1	0	0	0	1
	0	1	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	0	0	0	-	-	-	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	-	-	0	1	0			
Bi201_Au	0	0	0	0	-	1	0	1	0	-	1	1
	1	0	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	1	1	0	-	0	-	-	0	-
	1	1	-	0	0	0	0	1	0	-	1	0
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	1	0	-	-	-

1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	0	1	1	1	1
0	-	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	1	1	0	0	0
0	0	1	1	-	-	0	0	0			

Bi202_Cz											
0	0	0	0	-	1	0	1	0	-	1	1
1	0	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	1	1	0	-	0	-	-	0	-
1	1	-	0	0	0	0	1	0	-	1	0
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-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
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1	0	0	0	-	1	0	0	1	0	0	1
0	-	0	-	-	-	-	-	0	1	1	0
-	-	-	1	0	0	-	-	-	1	0	0
0	0	0	1	1	-	-	-	-	1	-	1
0	0	0	0	-	-	-	0	-	-	-	0
1	1	0	1	-	-	0	0	0			

Bi204_Pol											
0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	1	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	1	1	1	0
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-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
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0	0	0	0	0	0	-	1	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	0	2	1	1	1
0	1	0	-	-	-	-	-	0	1	0	0
1	1	-	1	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	1	1	0	0	0
1	0	0	0	-	-	0	0	0			

Bi205_Pol											
0	0	0	0	-	1	1	1	0	-	1	2
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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-	-	-	0	-	-	-	-	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	1
1	0	0	0	0	0	-	0	0	0	0	1
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0	0	0	0	-	-	-	0	-	-	-	0
0	0	0	0	-	-	0	0	0			

Bi206_Pol											
0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
0	0	0	0	0	0	0	0	-	0	1	0

-	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	1	0	0	0	0	0	0	0	0	0	0
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1	0	0	0	0	0	-	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	2	1	1	1
0	-	0	-	-	-	-	-	0	1	0	0
1	1	-	1	0	0	-	-	-	1	0	1
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0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			
Bi207_Pol 0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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-	-	-	-	-	-	-	-	-	-	-	-
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-	-	-	1	0	0	-	-	-	1	0	0
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0	0	0	0	-	-	-	0	-	-	-	0
1	1	0	0	-	-	0	0	0			
Bi311_Lith 0	0	0	0	-	1	0	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	1	0
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1	1	0	1	1	0	0	0	0	0	1	1
1	0	0	0	-	1	0	0	2	1	1	1
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0	0	0	0	-	-	-	0	-	-	-	0
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Bi208_It 0	0	0	1	0	1	0	0	-	-	-	-
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-	-	-	1	1	0	-	-	0	-	-	-
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-	-	0	0	-	1	0	0	1	0	0	1
0	-	1	0	0	1	1	1	0	1	0	0
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0	0	0	0	1	-	-	-	1	-	-	0

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
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Bi209_It	0	0	0	1	0	1	0	0	-	-	-	-
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Bi211_Fr	0	0	0	1	0	1	0	0	-	-	-	-
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Bi212_Sw	0	0	0	1	0	1	0	0	-	-	-	-
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184

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Bi216_It	0	0	0	1	0	1	0	0	-	-	-	-
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Bi218_Au	0	0	0	0	-	1	0	0	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
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Bi219_Eng	0	0	0	1	0	1	0	0	-	-	-	-
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186

Taxon											
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Bi220_Bru	0	0	0	1	0	1	0	0	-	-	-	-
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Bi223_Fr	0	0	0	1	0	1	0	0	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	1	0
	0	1	0	0	0	0	0	0	0	0	0	0

	0	0	0	0	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	6	0	0	1
	0	-	1	0	0	0	1	0	0	0	-	-
	-	-	-	1	0	0	-	-	-	1	0	08
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	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	1	1	-	0	0	0			
Bi224_Neth	0	0	0	1	0	1	0	0	-	-	-	
	-	0	-	0	-	-	-	0	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	0
	0	-	-	0	1	0	1	0	0	-	-	0
	-	1	-	1	0	0	0	0	1	0	-	0
	0	1	0	0	0	0	0	0	0	-	0	0
	-	-	-	-	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	-	-	-	-	-	-	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	-	-	0	0
	0	0	0	-	0	-	0	-	0	-	-	-
	1	0	0	1	0	0	0	-	0	0	0	0
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	0	-	-	0	0	-	1	0	0	1	0	0
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	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	0	1	0	-	0	0	0		
Bi225_Neth	0	0	0	1	0	1	0	0	-	-	-	
	-	0	-	0	-	-	-	0	-	-	-	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	-	-	-	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	0	0	0	-	-	0	0
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	0	-	-	-	-	-	-	-	-	-	-	-
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	0	0	0	0	0	-	-	-	0	-	-	-
	0	0	0	0	1	1	-	0	0	0		
Bi226_Basque	0	0	0	1	0	0	0	0	-	-	-	
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	0	1	0	0	0	0	0	0	1	4	0	0
	-	-	-	-	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	-	-	-	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	0	0	0	-	-	0	0
	0	0	0	-	0	-	0	-	0	-	-	-
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	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	1	0	1	-	0	0	0		
Bi312_It	0	0	0	1	0	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0

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	-	-	-	-	-	-	-	1	1	1	0	0
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	-	-	-	0	-	-	-	-	-	-	-	-
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	1	0	-	0	0	0			
Bi313_It	0	0	0	1	0	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	1	0	-	0	0	0			
Bi314_Bel	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
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	0	0	0	0	-	-	-	0	-	-	-	0
	0	0	0	1	1	-	0	0	0			
Bi315_It	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
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	1	0	0	1	1	5	0	0	0	0	0	1
	0	0	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-

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	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	1	1	-	0	0	0			
Bi316_It	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	190
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	1	1	0	0
	0	0	0	0	0	0	0	1	1	0	1	0
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	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	1	0	1	0	-	-	-	0	0	0	0	0
	-	-	0	0	-	0	-	-	-	0	0	-
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	0	-	0	0	0			
Bi317_It	0	0	0	0	-	1	0	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	1	0	0	0
	0	0	0	0	0	0	0	1	0	0	1	0
	-	0	0	1	1	0	-	-	0	-	-	-
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
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	0	1	0	0	0	0	-	0	0	0	0	1
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	0	0	0	0	-	0	-	-	-	0	0	-
	-	-	1	1	0	-	1	2	0	0	-	-
	-	-	-	-	0	0	-	-	-	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	1	1	-	0	0	0			
B1_Fi	0	0	0	1	0	0	-	1	1	1	0	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	2	0	0	0	0	0	0	1	1	1	0	0
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	0	0	0	0	0	0	0	0	1	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	-	-	1	0	0	9	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	0	-	0	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
B2_Fi	0	0	0	1	0	0	-	1	1	1	0	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	1	1	0	-	-	0	-	-	-
	2	0	0	0	0	0	0	1	1	1	0	0
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190

	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	1	1	1
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	1	0	0	0	-	-	0	0	0			
B6_It	0	0	0	0	-	1	5	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
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	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	0	-	-	1	0	0	2	0	0	1
	2	-	0	-	-	-	-	-	0	1	0	0
	1	0	3	0	0	1	1	0	0	1	0	1
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	-	0	1	0	-	-	-	1	1	0	0	0
	1	0	1	0	-	-	0	0	0			
B7_It	0	0	0	1	0	1	3	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
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	-	-	-	-	-	-	-	0	-	-	-	-
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	0	0	0	0	0	0	0	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	1	0	0	1
	0	-	1	0	0	1	1	-	0	1	0	0
	1	1	-	1	0	1	1	1	0	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	1	1	0	1	1	1	1	0	-	-	-	0
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B11_Nw	0	0	0	1	2	1	4	1	1	0	0	-
	0	-	0	-	-	-	0	-	-	-	0	0
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	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
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	1	0	0	0	-	-	0	0	0			
B12_Nw	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0

	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
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	1	1	0	0	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
B14_Nw	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	-	-	-	-	-	-	-	-	-	-	-	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	0	-	0	-	-	-	-	-	0	1	0	0
	1	0	0	1	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B15_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0
	1	0	0	0	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B16_Ru	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	1	0	0	1	1
	0	0	0	1	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	0	1	0	0	1

0	-	1	0	0	0	1	-	0	1	0	0
1	1	-	0	0	1	0	0	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
-	0	0	1	0	1	1	1	1	-	-	0
1	0	1	0	-	-	0	0	0			

B18_It

0	0	1	1	1	1	2	1	0	-	1	90
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	1	0	0	0	0	1	1	0	1
1	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0	-	-	-	-
-	-	-	-	-	-	-	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	0	0	0	-	1	0
0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	0	-	-	-	1
0	0	0	0	0	0	0	1	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	-	-	1	0	1	5	0	0	1
0	-	1	0	0	1	1	1	0	1	0	0
1	0	-	1	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
-	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

B19_Ge

0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
1	0	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0	-	-	-	-
-	-	-	-	-	-	-	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	1	1	1	0	0	0	-	1	0
0	0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	1	0	0	1	1
0	0	0	0	0	0	0	1	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	-	-	1	0	0	1	0	0	1
0	-	1	0	0	0	1	-	0	1	0	0
1	0	-	1	0	1	1	0	0	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
-	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

B20_It

0	0	0	0	-	1	5	1	1	1	1	2
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0	-	-	-	-
-	-	-	-	-	-	-	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	-	0	-	0	0	0	-	1	0
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0	0	0	0	0	0	0	0	-	0	0	0
0	0	-	1	-	1	0	0	-	-	-	1
0	0	1	0	0	0	0	0	0	0	0	1
1	0	1	0	-	-	-	0	0	0	1	0
-	-	0	-	-	1	0	1	1	1	0	1
0	-	1	0	0	1	1	1	0	1	3	0
1	0	2	1	0	0	-	-	-	1	0	1
0	0	0	1	1	-	-	-	1	1	-	1
-	0	0	0	-	-	-	1	1	1	0	0
1	0	0	0	-	-	0	0	0			

B22_Swe

0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	0	-	-	-	-
-	-	-	-	-	-	-	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0

	1	0	0	0	0	-	0	0	0	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	1	0	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	1	0	0	1
	1	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	1	1	1	0	0
	1	0	0	0	-	-	0	0	0			
B23_It	0	0	0	0	-	1	5	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
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	0	0	0	1	1	1	0	0	0	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	1	0	0	1
	0	-	1	0	0	1	1	-	0	1	0	0
	1	2	0	0	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	1	1	1	0	0
	1	0	0	1	-	-	0	0	0			
B27_Sco	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	1	0	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	2	0	0	1
	1	-	1	0	0	0	1	-	0	1	0	0
	1	0	0	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	1	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B28_It	0	0	0	0	-	1	3	0	-	-	-	-
	0	-	0	-	-	-	1	1	1	1	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	0	-	1	0
	0	0	0	0	1	0	0	0	0	0	0	1
	0	0	0	0	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	1	0	0	1
	0	-	1	0	0	1	1	1	0	1	0	0
	1	0	0	1	0	1	1	0	0	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	1	-	-	0	0	0			

194

B29_Ire	0	0	0	0	-	1	5	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	0	-	1	0	0	1	1	-	0	1	0	0
	1	2	-	1	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	1	-	-	1	0	0	0	0
	1	0	1	0	-	-	0	1	0			
B32_Hun	1	0	1	0	-	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	1	0
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	0	0	0	1	0	0	0	-	-	0	0	0
	0	0	-	0	-	0	-	0	-	-	-	1
	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	-	0	0	1
	1	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B33_Nw	0	0	1	0	-	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	1	1	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	1	1	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
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	0	0	0	0	0	0	0	0	1	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	2	0	0	1
	0	-	1	0	0	1	1	-	0	1	0	0
	1	2	0	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	1	0	0
	1	0	0	0	-	-	0	0	0			
B36_Po	0	0	0	0	-	1	5	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
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	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	0	0	0	1	0	0	1

	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	2	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	1	-	1	0	0	-	-	-	1	0	1
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	1	0	0	0	-	-	0	0	0			
B37_Ge	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	1	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	1	1	1	0	0	0	-	1	0
	0	0	0	0	0	0	1	0	0	0	0	0
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	0	0	-	0	-	1	0	1	0	0	1	1
	0	0	0	0	0	0	0	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	1	0	0	1
	1	-	1	0	1	0	1	2	0	1	0	0
	1	1	0	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
B38_De	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	1	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	0	0	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	2	0	0	1
	0	1	0	-	-	-	-	-	0	1	0	0
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	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
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B39_De	0	0	0	-	-	1	3	0	-	-	-	-
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	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	1	0
	-	1	0	1	1	0	-	-	0	-	-	-
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	-	-	0	-	-	1	0	1	2	0	0	1
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	1	2	0	1	1	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
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B40_De	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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196

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	-	-	-	-	-	-	-	-	-	-	-	-
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B41_De	0	0	0	0	-	1	5	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
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	-	-	-	-	-	-	-	0	-	-	-	-
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B42_De	0	0	1	1	1	1	2	1	0	-	1	2
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	-	-	-	-	-	-	-	0	-	-	-	-
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B46_De	0	0	1	1	1	1	2	1	0	-	1	0
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	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	0	0	0	1	-	-	-	1	-	-	0

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B47_De	0	0	1	1	1	1	2	1	0	-	1	0
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B49_De	0	0	0	1	0	1	3	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
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	-	-	-	-	-	-	-	0	-	-	-	-
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	-	0	0	1	0	1	0	0	-	-	-	0
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B51_It	0	0	0	0	-	0	-	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	-	-	-	-	-	-	-	-	-	-	0
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B55_Ru	0	0	0	0	-	1	5	0	-	-	-	-
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	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0

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	1	0	0	0	-	-	0	0	0			
B56_Ge	1	0	0	0	-	1	5	0	-	-	-	-
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	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	1	0	0	1
	2	-	0	-	-	-	-	-	0	1	0	0
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	1	0	0	1	-	-	0	0	0			
B57_Po	0	0	0	0	-	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
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	-	-	0	-	-	1	1	0	2	0	0	1
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	0	0	0	0	1	-	-	-	1	-	-	0
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B58_Po	0	0	1	0	-	1	2	1	0	-	1	2
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	-	-	-	-	-	-	-	1	0	-	0	0
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B60_De	0	0	1	1	1	1	2	1	0	-	1	0
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199

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	-	-	-	-	0	0	0	1	1	1	1	1
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B61_De	0	0	0	1	0	1	3	1	0	-	1	1
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	0	0	0	-	-	-	-	-	0	1	3	0
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B62_De	0	0	1	1	1	1	2	1	0	-	1	0
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B63_De	0	0	1	1	1	1	2	1	0	-	1	0
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	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0
	1	2	0	1	0	1	0	0	1	1	0	1

	1	2	3	4	5	6	7	8	9	10	11	12
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	0	0	0
	1	0	1	0	-	-	0	0	1			
B64_De	0	0	1	0	-	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	1	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
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	0	0	0	0	0	0	0	0	1	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	2	0	0	1
	2	0	0	-	-	-	-	-	0	1	0	0
	1	2	0	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
B65_De	0	0	0	0	-	1	5	1	0	-	1	1
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	1	0	0	0
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	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0
	1	2	0	1	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	1	0	0	-	-	0	0	0			
B66_De	0	0	1	0	-	1	2	1	0	-	1	2
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	1	0	0	0	0	0	0	0	0	1
	1	1	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	2	0	0	1
	1	-	1	0	0	1	1	2	0	1	0	0
	1	2	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
B67_De	0	0	0	0	-	1	-	1	0	-	1	2
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-

	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	0	0	0	1	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	-	-	1	0	1	2	1	1	1
	0	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
	0	0	0	1	1	-	-	-	1	1	-	1
	-	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
B72_Spa	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
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	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	0	-	0	-	-	-	-	-	0	1	0	0
	1	0	1	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B74_Ge	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	1	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	1	0	1	0	1	0	1	1	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	-	0	0	1	0	0	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B75_Ge	0	0	0	1	0	1	3	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	-	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	0	0	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	3	-	0	-	-	-	-	-	0	1	0	0
	1	1	0	1	0	1	1	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B76_Spa	0	0	1	1	1	1	2	1	0	-	1	2
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	1	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	1	1	0	0	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	0	-	-	-	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
B77_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	2	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
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	0	0	0	0	0	0	0	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	0	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0
	1	0	0	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	1	0	0
	1	0	0	0	-	-	0	0	0			
B78_Nw	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	1	1	0	-	1	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	0	0	1	0	0	0	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
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	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B79_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	1	1	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	2	0	0	1
	0	0	0	-	-	-	-	-	0	1	0	0

	1	0	-	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	0	-	-	-	0
	1	0	0	0	-	-	0	1	0			
B80_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	20
	-	-	0	0	-	-	-	-	-	-	0	1
	1	0	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	0	-	-	-	-	-	-	0	-
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	0	0	0	1	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	7	0	0	1
	1	-	0	-	-	-	-	-	0	1	0	0
	1	0	0	0	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	0	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
B81_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	1	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	1	2	0	0	1
	1	-	0	-	-	-	-	-	0	1	0	0
	1	2	0	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	0	0	0
	1	0	0	1	-	-	0	0	0			
B86_Nw	0	0	0	1	2	0	-	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	1	0
	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	1	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	1	2	0	0	1
	2	0	0	-	-	-	-	-	0	1	0	0
	1	0	-	0	0	1	0	1	1	1	0	1
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	1	0	0	0	-	-	0	0	0			
B88_Hun	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	0	1	0	0	0	1	0	0	0	0	0
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	0	0	-	0	-	1	0	1	0	0	0	1
	0	0	1	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	0	0	2	0	0	1
	0	1	0	-	-	-	-	-	0	1	0	
	1	1	-	1	0	1	1	1	1	1	0	1
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-	-	-	0	-	-	-	-	-	-	0	-
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211

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B4_Ch	0	0	1	1	1	1	2	1	0	-	1	2
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AB3_It	0	0	1	1	1	1	2	1	0	-	1	0
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AB4_Sco	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	1	1	0	-	-	0	-	-	-
	0	0	0	0	0	1	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	1	1	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	1	1	1	1	1	1
	1	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	1	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	2	0	0	1
	2	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
Ab8_Arm	1	2	1	0	-	1	2	1	0	-	1	0
	0	-	1	2	1	1	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-

-	-	-	-	-	-	-	1	0	-	0	0
1	0	1	0	0	0	0	0	-	0	1	0
-	1	0	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1	1	1	1	1	1	1	1
0	0	-	0	-	1	0	0	-	-	-	1
0	1	0	0	0	0	0	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	0	0	1	0	0	1
2	-	0	-	-	-	-	-	0	1	0	1
1	3	0	1	0	1	0	1	0	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	0	1	1	0	-	-	-	0
1	0	1	0	-	-	0	1	0			
Ab9_Ice 0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
0	0	0	0	0	0	1	0	-	0	0	-
-	-	-	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	0	0	0	0	0	0	0	0	1	1	0
0	0	0	0	1	1	1	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	1	0	0
1	3	-	0	0	1	0	1	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	0	1	1	0	-	-	-	0
1	0	1	0	-	-	0	0	0			
Ab10_Ice 0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	1	0	0	-	1	0	0	0	0
1	-	-	0	1	0	0	1	0	-	0	0
0	0	0	0	0	1	1	0	-	0	0	-
-	-	-	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	1	0
0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	-	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-
1	0	1	0	-	-	-	0	0	0	0	0
-	-	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	1	0	0
1	3	-	0	0	1	0	1	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	0	1	1	0	-	-	-	0
1	0	1	0	-	-	0	1	0			
AB13_Nw 0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	1	1	0	-	1	1
1	0	0	1	0	0	0	0	1	1	0	1
0	-	0	1	0	0	-	1	1	0	1	0
1	-	-	1	0	0	1	1	0	-	0	0
0	0	0	0	1	0	0	0	-	0	0	-
-	-	-	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	-	-	0	0	0
0	0	-	0	-	1	0	1	2	0	1	1
0	0	0	0	0	1	0	1	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	1	0	2	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	0	0	1	0	1	0	0	1	1	0	1

0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	0	0	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

AB17_Gre

0	0	0	0	-	1	5	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
0	0	0	1	0	0	0	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	0	1	0	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	0	-	-	-	1
0	0	0	0	0	1	0	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	0	0	2	0	0	1
2	-	0	-	-	-	-	-	0	1	0	0
1	1	4	0	0	0	0	0	0	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	-	0	1	0			

Ab21_Ch

0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	1	0	0	0	0	1	1	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
0	0	0	0	1	0	0	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	1	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	1	1	1	1	1	1	1
1	1	2	0	-	1	0	0	-	-	-	1
0	0	0	0	0	1	0	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	0	0	1	0	0	1
2	-	1	0	0	0	1	-	0	1	0	0
1	0	1	0	0	1	0	1	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	1	1	0	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

AB24_It

0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	1	1	1	0	0	0
-	0	0	1	0	0	0	0	1	1	0	1
0	-	0	1	0	0	-	1	1	0	0	-
1	-	-	0	0	0	1	1	0	-	0	0
0	0	0	0	1	0	0	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	1	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	1	0	0	-	1	0	0	-	-	-	1
0	0	0	0	0	0	1	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	0	0	2	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	2	-	0	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
1	1	0	0	-	-	-	0	-	-	-	0
1	0	1	0	-	1	0	0	0			

AB25_In

0	0	1	0	-	1	2	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	1	1
0	0	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
1	-	-	0	0	0	1	1	0	-	0	0
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-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	1	1	1	0	-
-	-	-	-	-	-	-	-	-	-	-	-

215

	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	0	0	1	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	7	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	2	0	0	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	1	1	1	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
AB26_Sco	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	1	0	-	1	1
	0	1	0	0	-	-	-	-	-	-	0	1
	0	-	0	1	0	0	-	1	4	0	1	0
	1	-	-	1	0	0	1	1	0	-	0	0
	0	0	0	0	1	0	0	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	0	1	1	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	0	-	-	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	4	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	0	0	0	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	0	1	1	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
AB30_Nw	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	1	0	-	1	1
	1	0	0	1	0	1	0	0	0	0	0	1
	0	-	0	1	0	0	-	1	5	0	0	-
	1	-	-	0	0	0	1	1	0	-	0	0
	0	0	1	0	0	0	0	0	-	0	1	0
	-	1	1	1	1	1	0	1	1	1	1	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	-	0	0	1	1	1	0
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	0	0	-	1	0	1	0	0	-	-	-	1
	0	0	0	0	0	0	0	0	1	0	0	1
	1	0	0	1	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	2	1	1	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	1	0	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	0	1	1	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
AB31_Se	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	1	0	1	0	1	0	1	0	0	0
	-	0	0	0	-	-	-	-	-	-	0	1
	0	-	1	1	0	0	-	1	0	0	0	-
	1	-	-	0	0	0	1	1	0	-	0	1
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	1	1	2	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	0	-	0	-	1	0	1	0	0	1	1
	0	0	0	0	0	1	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	1	0	2	0	0	1
	1	-	1	0	0	0	1	-	0	1	0	0
	1	2	-	1	0	1	1	0	0	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	1	1	1	1	1	0	0	0
	1	0	0	0	-	-	0	0	0			
AB34_lt	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	1	1	0	0	0
	-	0	0	0	-	-	-	-	-	-	0	1

0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
0	0	0	0	1	0	0	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
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0	0	0	0	0	-	1	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	1	0	0	-	1	0	0	-	-	-	1
0	0	0	0	0	0	1	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	0	0	2	0	0	1
1	-	1	0	0	1	1	1	0	1	0	0
1	0	0	1	0	1	1	0	0	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
1	1	1	0	-	-	-	1	1	1	0	0
1	0	1	0	-	-	0	0	0			

AB35_Sco 0	0	0	1	2	1	6	0	-	-	-	-
0	-	0	-	-	-	1	1	0	-	1	1
0	0	0	0	-	-	-	-	-	-	0	1
0	-	0	1	0	0	-	1	3	0	0	-
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-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	0	-	-	-	-	-	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	-	-	0	0	0
0	0	-	0	-	1	0	1	1	0	0	1
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0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	1	1	1	0	-	-	-	0
1	1	0	0	-	-	0	0	0			

AB44_De 0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	0	1
0	0	0	1	0	0	0	0	1	1	0	1
0	-	1	1	0	0	-	1	1	0	1	1
1	-	-	1	0	1	0	1	0	-	0	0
0	1	0	0	0	0	0	0	-	0	1	0
-	1	1	1	1	0	-	-	1	1	0	1
2	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	0	0	-	1	0
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0	0	0	1	0	0	0	0	0	0	0	1
1	1	0	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	2	1	1	1
0	-	0	-	-	-	-	-	0	1	0	0
1	1	2	0	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	0	-	-	-	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

AB45_De 0	0	1	0	-	1	2	0	-	-	-	-
0	-	0	-	-	-	1	1	0	-	1	1
1	0	0	0	-	-	-	-	-	-	0	1
0	-	0	1	0	0	-	1	1	0	0	-
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0	0	0	0	0	0	0	0	1	0	0	1
1	0	0	0	-	-	-	0	0	0	1	0
-	-	0	0	-	1	0	1	2	1	1	1
0	-	0	-	-	-	-	-	0	1	0	0

217

	1	2	-	0	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	1	-	-	-	0
	1	0	0	0	-	-	0	0	0			
AB50_GrAb	0	0	0	0	-	1	5	0	-	-	-	-
	-	0	-	1	0	1	1	0	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	0
	1	0	-	0	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	1	0	-	0
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	-	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	-	0	0	1	0	0
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	-	-	-	-	-	0	0	0	0	-	0	0
	0	0	0	-	0	-	1	0	0	-	-	-
	1	0	0	0	0	0	1	0	0	0	0	0
	1	0	-	-	-	-	-	-	-	-	-	-
	0	-	-	0	0	-	1	0	0	2	0	0
	1	0	-	1	0	0	0	1	1	0	1	0
	0	1	2	-	1	0	0	-	-	-	1	0
	1	0	0	0	0	1	-	-	-	1	-	-
	0	0	0	0	0	-	-	-	0	-	-	-
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AB52_It	0	0	0	1	0	1	3	0	-	-	-	-
	0	-	0	-	-	-	1	0	1	0	0	0
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	1	0	0	1	0	0	-	1	0	0	0	-
	1	-	-	0	0	0	1	1	0	-	0	0
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	1	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
	0	1	1	0	-	1	0	0	-	-	-	1
	0	0	0	0	0	0	1	1	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	1	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
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Ab53_Cy	0	0	0	0	-	1	5	0	-	-	-	-
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	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	3	0	0	1
	2	-	1	0	0	0	1	-	0	1	0	0
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AB54_Se	0	0	1	1	1	1	2	0	-	-	-	-
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	0	-	0	1	0	0	-	1	1	0	0	-
	1	-	-	0	0	0	1	1	0	-	0	1
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	1	1	2	0	-

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	0	0	-	0	-	1	0	1	0	0	1	1
	0	0	0	0	0	1	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	1	0	2	0	0	1
	2	-	1	0	0	0	1	-	0	1	0	0
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	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	1	1	1	0	-	-	-	0
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AB59_De	0	0	1	1	1	1	2	1	0	-	1	2
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	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	1	0
	-	1	1	1	1	1	0	1	1	0	1	1
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	0	0	0	-	0	-	0	0	0	-	1	0
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	0	0	0	1	0	0	0	0	0	0	0	1
	1	0	0	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	0	2	1	1	1
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	1	0	0	1	0	1	0	0	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	1	0	0
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AB68_Annam	0	0	1	1	1	1	2	1	0	-	1	
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	-	-	-	-	-	-	-	-	1	0	-	0
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	-	0	0	0	0	0	0	0	0	0	0	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	0	0	0	0	-	0	0
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	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	1	0	-	-	0	1	0		
AB69_Cham	0	0	1	1	1	1	2	1	0	-	1	
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	-	-	-	-	1	1	0	-	-	0	-	-
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	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	1	0	-	-	0	1	0		
AB70_Lith	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	1	1	0	-	-	0	-	-	-
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	-	-	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	1	0	1	1	1	0	0
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AB71_Fr	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	0	-	-	-	-	-	-	-	-
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	-	-	0	-	-	-	-	-	0	0	-	-
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	0	0	0	1	0	1	0	0	-	-	-	0
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AB84_Nw	0	0	0	0	-	0	-	1	0	-	1	2
	0	-	0	-	-	-	0	-	-	-	0	0
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	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	1	0
	-	0	0	0	-	-	-	-	-	-	-	-
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	-	-	-	0	-	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	1	0	0	0
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	-	-	0	-	-	1	0	1	2	1	1	1
	0	-	1	0	0	0	1	-	0	1	0	0
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	0	0	0	0	1	-	-	-	1	-	-	0
	-	0	0	1	0	1	1	1	1	0	0	0
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AB85_Nw	0	0	0	0	-	0	-	1	1	0	0	-
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	-	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	1	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
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	0	0	-	0	-	1	0	0	-	-	-	1
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	-	-	0	-	-	1	0	1	2	1	1	1

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	0	0	0	0	1	-	-	-	1	-	-	0
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Ab89_Por	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	-	-	-	-	1	0	-	0	0
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	0	0	0	0	0	-	1	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	1	1	1	1	1	1	1	1
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	-	-	0	0	-	1	0	0	-	0	0	1
	0	-	0	-	-	-	-	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			
AB93_Sco	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	0	-	-	-	1	1
	0	0	0	0	-	-	-	-	-	-	0	1
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	0	0	0	1	0	1	1	1	1	1	0	0
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AB95_Fi	0	0	1	1	1	1	2	0	-	-	-	-
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	-	-	-	-	-	-	-	-	-	-	0
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	0	0	0	0	-	-	-	1	0	1	0	0
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AB99_Fr	0	0	1	1	1	1	2	1	0	-	1	2
	0	-	0	-	-	-	1	1	0	-	1	1
	1	0	0	0	-	-	-	-	-	-	0	1
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-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	0	3	0	0	1
0	0	0	0	0	1	0	0	0	0	0	1
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1	2	-	1	0	1	0	1	1	1	0	1
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1	0	0	0	-	-	0	0	0			

AB101_Fi	0	0	1	1	1	1	2	0	-	-	-	-
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	-	-	-	-	-	-	-	1	0	-	0	1
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AB102_Fi	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	1	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	1
	0	0	0	0	1	0	0	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
	2	0	0	0	0	0	0	1	1	1	0	0
	0	0	0	0	0	-	0	1	1	2	1	0
	0	0	0	1	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	-	1	1	1
	0	0	-	1	0	1	0	1	0	3	-	1
	0	0	0	0	0	0	0	0	1	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	1	7	0	0	1
	0	-	1	0	0	0	1	-	0	1	0	0
	1	1	-	1	0	1	0	1	1	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	1	0	0	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			

AB109_Fi	0	0	1	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	1	0	-	1	1
	1	0	0	0	-	-	-	-	-	-	0	1
	0	-	0	1	0	0	-	1	0	0	1	-
	1	-	-	0	0	0	1	1	0	-	0	0
	0	0	1	0	0	0	0	0	-	0	1	0
	-	1	0	1	1	0	-	-	0	-	-	1
	0	0	0	0	0	0	0	0	0	0	0	0
	0	1	0	0	0	-	-	-	-	-	1	0
	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	-	0	0	0
	0	0	-	1	2	1	0	0	-	-	-	1
	0	0	1	0	1	0	0	0	0	0	0	1
	1	0	1	0	-	-	-	0	0	0	1	0
	-	-	0	0	-	1	0	1	3	1	1	1
	0	-	1	0	0	1	1	-	0	1	0	0
	1	0	-	1	0	0	-	-	-	1	0	1
	0	0	0	0	1	-	-	-	1	-	-	0
	0	0	0	0	-	-	-	1	0	0	0	0
	1	0	0	0	-	-	0	0	0			

AB110_Nw	0	0	1	1	1	1	2	1	0	-	1
0	0	-	0	-	-	-	1	1	0	-	1
1	1	0	0	0	-	-	-	-	-	-	0
1	0	-	0	1	0	0	-	1	0	0	0
-	1	-	-	1	0	0	1	1	0	-	0
0	0	0	0	0	1	0	0	0	-	0	0
-	-	-	-	1	1	0	-	-	0	-	-
-	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	-	0	0	1	1	0
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	0	0	0	0	-	0	0
0	0	0	-	0	-	1	0	0	-	-	-
1	0	0	0	0	0	1	0	0	0	0	0
1	0	-	-	-	-	-	-	-	-	-	-
0	-	-	0	0	-	1	0	1	2	0	0
1	0	-	0	-	-	-	-	-	0	1	0
0	1	0	0	1	0	0	-	-	-	1	0
1	0	0	0	0	1	-	-	-	1	-	-
0	0	0	0	0	-	-	-	0	-	-	-
0	1	0	0	0	-	-	0	1	0		

Ab118_Swe	0	0	1	1	1	1	2	0	-	-	-
-	0	-	0	-	-	-	1	1	0	-	1
1	1	0	0	0	-	-	-	-	-	-	1
1	0	-	0	0	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	0	-	-	-
-	-	-	-	-	-	-	-	0	-	0	1
0	-	1	1	1	1	0	-	-	1	1	0
1	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	-	0	0	0	-	1
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0	0	0	0	0	0	0	1	1	1	1	1
1	1	0	-	0	-	0	-	0	-	-	-
1	0	0	0	1	0	0	0	0	0	0	0
1	1	0	1	0	-	-	-	0	0	0	1
0	-	-	0	-	-	1	1	1	2	0	0
1	0	-	0	-	-	-	-	-	0	1	0
0	1	0	-	1	1	1	0	0	1	1	0
1	0	0	0	0	1	-	-	-	1	-	-
0	-	0	0	1	0	1	1	0	-	-	-
0	1	0	0	0	-	-	0	0	0		

AB124_Cro	0	0	0	0	-	1	5	0	-	-	-
-	0	-	1	0	1	1	0	-	-	-	0
0	-	-	0	0	-	-	-	-	-	-	0
1	1	0	0	0	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	1	0	-	0
0	0	0	0	1	0	0	0	0	-	0	0
-	-	-	-	1	1	0	-	-	0	-	-
-	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	-	0	1	1	0	1
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0	-	-	0	0	-	1	0	1	1	0	0
1	0	-	1	0	0	1	1	1	0	1	0
0	1	1	-	1	0	0	-	-	-	1	0
1	0	0	0	0	1	-	-	-	1	-	-
0	0	0	0	0	-	-	-	1	1	1	0
0	1	0	0	0	-	-	0	0	0		

AB127_Bu	0	0	1	1	1	1	2	0	-	-	-	-
0	-	1	0	1	0	1	1	1	0	0	0
-	0	0	0	-	-	-	-	-	-	0	1
1	0	0	1	0	0	-	1	0	0	0	-
1	-	-	0	0	0	1	1	0	-	0	1
0	0	0	0	1	0	0	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	1	1	2	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	1	0	0	1	1
0	0	0	0	0	1	0	0	0	0	0	1

0	-	-	-	-	-	-	-	-	-		0
-	-	0	0	-	1	1	1	2	0	0	1
0	-	1	0	0	0	1	-	0	1	0	0
1	0	-	1	0	1	1	1	0	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	1	1	1	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

AB_Sco6

0	0	1	1	1	1	2	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	1	0	0	-	1	0	0	1	1
1	-	-	0	0	0	1	1	0	-	0	0
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-	-	-	1	1	0	-	-	0	-	-	-
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-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	0	-	0	-	1	0	0	-	-	-	1
0	0	0	1	0	0	0	0	0	0	0	1
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	1	1	0	5	0	0	1
0	-	0	-	-	-	-	-	0	1	0	0
1	0	0	1	1	1	0	0	1	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
0	0	0	1	1	1	1	0	-	-	-	0
1	0	0	0	-	-	0	0	0			

Ab229_It

0	0	1	1	1	1	2	1	0	-	1	0
0	-	0	-	-	-	0	-	-	-	1	0
-	-	0	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
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-	-	-	1	1	0	-	-	0	-	-	-
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0	0	0	0	0	-	0	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	1	1	1	1	1	1	1	1
1	0	-	0	-	0	-	0	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-
0	-	-	-	-	-	-	-	-	-	-	1
0	0	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	1	0	1	0	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
1	1	0	1	0	1	2	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

Ab237_It

0	0	1	1	1	1	2	1	0	-	1	2
0	-	0	-	-	-	1	1	1	0	0	0
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0	-	0	1	0	0	-	1	0	0	1	0
1	-	-	0	0	0	1	1	0	-	0	0
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-	-	-	1	1	0	-	-	0	-	-	-
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0	0	0	0	0	-	0	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	1	1	1	1	1	1	1
1	0	-	0	-	0	-	0	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-
0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	1	0	1	0	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
1	1	0	1	1	1	2	0	-	-	-	0
1	0	1	0	-	-	0	0	0			

Ab239_It

0	0	1	1	1	1	2	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
-	0	-	0	-	-	-	-	-	-	0	1
0	-	0	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	1	0	-	0	0
0	0	0	0	0	0	0	0	-	0	0	-

	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	1	1	1	1	1	1
	1	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	1
	0	0	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	1	0	1	0	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	1	0	0	1	1	1	2	0	-	-	-	0
	1	1	1	0	-	-	0	0	0			

Ab240_It	0	0	0	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	0	1	0	0	0
	-	0	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
	0	0	0	0	0	0	0	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	1	1	1	1	1	1
	1	0	-	0	-	0	-	0	-	-	-	1
	0	0	0	0	0	0	0	1	0	0	1	0
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	-	-	-	-	0	0	-	-	-	1	0	0
	0	0	1	0	1	-	-	1	-	-	-	0
	1	1	0	1	1	1	2	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			

Ab241_It	0	0	0	1	0	1	3	0	-	-	-	-
	0	-	0	-	-	-	0	-	-	-	0	0
	-	-	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
	0	0	0	0	0	0	0	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	1	1	1	1	1	1
	1	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	1
	0	0	0	0	-	0	-	-	-	0	0	-
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	-	-	-	-	0	1	0	1	0	0	-	-
	-	-	-	-	-	-	-	-	-	-	-	0
	1	0	0	1	1	0	-	0	-	-	-	0
	1	0	1	0	-	-	0	0	0			

Ab245_Spa	0	0	1	1	1	1	2	0	-	-	-	-
	-	0	-	0	-	-	-	0	-	-	-	0
	0	-	-	0	0	-	-	-	-	-	-	0
	1	0	-	0	0	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	1	0	-	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	0	0	1	1	1	1	1
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	0	-	-	-	-	-	-	-	-	-	-	-
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	1	0	0	0	0	-	0	-	-	0	0	
	-	-	-	0	-	-	-	-	-	0	0	-
	-	-	-	-	-	0	0	-	-	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
	0	0	0	0	0	-	-	-	0	-	-	-
	0	1	0	0	0	-	-	0	0	0		
Ab246_lt	0	0	0	1	1	1	2	1	0	-	1	0
	0	-	0	-	-	-	1	1	1	0	0	0
	-	0	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	0
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	-	-	-	-	0	0	0	1	1	1	1	0
	0	0	-	0	-	0	-	0	-	-	-	0
	-	-	-	-	-	-	-	-	-	-	-	-
	0	-	-	-	-	-	-	-	-	-	-	1
	0	0	0	0	-	0	-	-	-	0	0	-
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	0	0	0	0	-	-	-	0	-	-	-	0
	1	0	0	0	-	-	0	0	0			
Ab247_lt	0	0	1	1	1	1	2	1	0	-	1	2
	0	-	0	-	-	-	1	1	1	0	0	0
	-	0	0	0	-	-	-	-	-	-	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	-	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	1	1	1	1	1
	1	0	-	0	-	1	0	1	0	2	-	1
	0	1	0	0	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	-	-	1	1	0	1	0	0	1
	0	0	1	0	0	1	1	2	0	1	1	0
	-	0	-	1	0	0	-	-	-	1	0	0
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Ab_Per2	0	0	1	1	1	1	2	0	-	-	-	-
	0	-	0	-	-	-	1	1	1	0	0	0
	-	0	0	1	0	0	0	0	1	1	0	1
	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	1	0	-	0	1
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	0	0	-	0	0	-	0	0	0	-	0	-
	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	1	1	1	1	1	1	1
	1	0	-	0	-	1	0	1	0	0	1	1
	0	0	0	1	0	0	0	0	0	0	0	1
	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	3	0	0	1
	2	-	1	0	0	0	1	-	0	1	0	0
	1	0	-	0	0	0	-	-	-	1	0	1
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AB281_lt	0	0	1	1	1	1	2	1	0	-	1	0
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	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
	-	-	-	-	-	-	-	0	-	0	0	-
	-	-	-	1	1	0	-	-	0	-	-	-
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	0	0	0	0	1	1	0	0	0	0	0	0
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	1	2	3	4	5	6	7	8	9	10	11	12
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	0	-	-	-	-	-	-	-	-	-	-	0
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	1	1	1	0	0	1	1	-	0	1	1	0
	-	-	-	1	1	0	-	-	-	1	0	0
	0	0	1	1	1	-	-	1	-	1	-	1
	-	0	0	1	0	0	-	0	-	-	-	0
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AB_ch1	0	0	1	1	1	1	2	1	0	-	1	2
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	1	-	-	0	0	0	1	1	0	-	0	0
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	5	0	0	1
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	0	0	5	0	0	1
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AB_Ti10	0	0	0	0	-	1	5	1	0	-	1	2
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	-	-	-	-	-	-	-	1	0	-	0	0
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	0	-	0	-	-	-	-	-	0	1	-	-
	-	-	-	1	0	0	-	-	-	1	0	1
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Ab_Ui12	0	0	1	1	1	1	2	1	0	-	1	2
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Taxon											
-	-	-	-	-	-	-	0	-	-	-	-
-	-	-	-	-	-	-	0	-	0	0	-
-	-	-	1	1	0	-	-	0	-	-	-
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Ab_Ui13 0	0	1	1	1	1	2	1	0	-	1	2
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-	-	-	-	-	-	-	0	-	-	-	-
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1	0	1	0	-	-	0	1	0			
Rhodo 0	0	0	0	-	0	-	0	-	-	-	-
0	-	0	-	-	-	0	-	-	-	0	0
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-	-	-	-	-	-	-	0	-	-	-	-
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0	-	-	-	-	-	-	-	-	-	-	0
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-	-	0	-	-	-	-	-	0	1	0	1
1	3	-	-	0	0	-	-	-	1	0	1
0	0	0	0	1	-	-	-	1	-	-	0
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AB_Ind3 0	2	1	1	1	1	2	0	-	-	-	-
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1	1	0	1	0	1	0	0	0	0	0	1
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0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	1	1	1
1	3	-	-	0	0	-	-	-	1	0	1

Taxon	1	2	3	4	5	6	7	8	9	10	11	12
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Ab_Per1	0	0	1	1	1	1	2	0	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
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	0	-	-	-	-	-	-	-	-	-	-	0
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	-	-	0	-	-	-	-	-	0	1	0	0
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Ab_Geo1	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	1	1	1	1	1	1	1	1
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	0	-	-	-	-	-	-	-	-	-	-	0
	-	-	0	0	-	1	1	1	2	0	0	1
	2	-	0	-	-	-	-	-	0	1	0	0
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	0	0	0	1	1	0	-	0	-	-	-	0
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A_Egy2	0	2	1	1	1	1	2	1	0	-	1	2
	0	-	0	-	-	-	0	-	-	-	1	1
	0	0	0	1	0	1	0	0	0	0	0	1
	0	-	0	1	0	0	-	1	0	1	0	-
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	-	-	0	-	-	-	-	-	0	0	-	-
	-	-	-	-	0	0	-	-	-	0	-	-
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A_Mal1	0	0	0	-	-	1	5	1	0	-	1	2
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ID												
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A_Ind9	0	0	1	1	2	1	8	0	-	-	-	-
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A_Kabyle1	0	2	1	1	1	1	2	0	-	-	-	-
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A227_Ru	0	0	1	1	1	1	2	1	0	-	1	2
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A228_Ru	0	0	1	1	1	1	2	1	0	-	1	0
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	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	0	0	0	0	-	0	0	0
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A_Ru4	0	0	1	1	1	1	2	1	0	-	1	0
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	1	0	1	0	-	-	0	0	0			
A232_Fr	0	0	0	1	0	1	3	0	-	-	-	-
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231

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A242_Pol	0	0	1	1	1	1	2	1	0	-	1	2
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	0	0	0	0	-	-	-	0	-	-	-	0
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	1	-	-	0	0	0	1	1	0	-	0	0
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	0	0	0	0	0	-	1	0	0	1	0	-

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0	0	1	0	1	-	-	1	-	-	-	0
1	0	0	1	1	1	1	0	-	-	-	0
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A249_It											
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1	-	-	0	0	0	1	1	0	-	0	1
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0	0	0	0	0	-	1	0	0	2	0	-
-	-	-	-	-	-	-	-	-	-	-	-
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0	0	0	0	0	0	1	1	0	0	1	0
0	-	-	-	-	-	-	-	-	-	-	0
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-	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	1	0	1	0	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
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A_Ch19											
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-	-	-	0	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
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0	-	-	-	-	-	-	-	-	-	-	0
-	-	0	0	-	0	-	-	-	0	0	-
-	-	0	-	-	-	-	-	0	0	-	-
-	-	-	-	0	0	-	-	-	0	-	-
-	-	-	-	-	-	-	-	-	-	-	0
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C319_Sca											
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0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	-	0	0	0	-	0	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	0	0	0	0	-	0	0	0
0	0	-	0	-	0	-	0	-	-	-	0
-	-	-	-	-	-	-	-	-	-	-	-
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0	0	0	0	-	-	-	0	-	-	-	0
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C320_Sca											
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C323_Gy	0	1	1	0	-	1	2	1	0	-	1	1
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	-	-	0	0	-	0	-	-	-	0	0	-
	-	-	0	-	-	-	-	-	1	1	5	0
	-	-	-	-	0	1	-	-	-	1	0	0
	1	0	0	0	1	1	-	-	-	-	-	0
	0	0	0	1	0	-	-	1	0	0	0	0
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C331_Sla	-	1	0	0	-	1	0	0	-	-	-	-
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C332_Sca	0	1	1	1	1	1	2	0	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
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234

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C334_Nw	0	1	0	0	-	1	-	0	-	-	-	-
	0	-	0	-	-	-	1	1	0	-	0	0
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	0	-	0	0	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	0	-	-	-	-
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C336_Sca	0	1	1	0	-	1	2	0	-	-	-	-
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	-	-	-	-	-	-	-	-	-	-	-	-
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C_India	0	1	1	0	-	1	2	0	-	-	-	-
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APPENDIX 3

COMMUNITY DETECTION ANALYSIS

The analysis carried out with STRUCTURE showed that AB stories are hybrids stories formed by motifs of Type A and B. Here, a short analysis which employed a community detection algorithm (*igraph* package) was implemented in order to see if this result was confirmed by the network analysis.

Methods: Community detection algorithm

For this analysis I employed the community detection algorithms which are a series of algorithms used to detect the eventual presence of community structure in a given network, namely groups of dense connected nodes with few interactions/connections across groups. Once the groups were identified, the motifs which composed them were extracted and compared qualitatively to the content of the tales.

To detect communities in our network, I calculated the modularity score for different algorithms belonging to the family of the modularity-optimization algorithms, which aimed to optimize the modularity score. *Modularity* is a statistic metric which gives a measure of the strength of division of a graph into partitions (or sub-graphs) in relation to the one expected with a random graph. Upon testing for the modularity score, I found that the multi-level algorithm (Blondel et al., 2008) returned the higher score. The multi-level algorithm (or Louvain algorithm) is based on a hierarchical approach which starts by greedily re-assigning each node to a different community in order to allow it to increase its own modularity. When this process cannot continue, and each node is assigned to a community, the community itself become the new vertex and the process is repeated with the merged communities. When the modularity score cannot be further increase or when a single vertex is left, the process reaches an end.

Results: Community detection algorithm

The multi-level community detection algorithm identified five communities and returned a modularity score of 0.21. The size of each community, namely how many nodes it includes is reported in the table 1. I then plotted a new graph in which each node is coloured based on the community it belongs to (see figure 1).

Community	1	2	3	4	5
Number of motifs	44	38	35	17	8

Table 1: Table showing the number of motifs assigned to each of the five communities identified by the Multi-level detection algorithm.
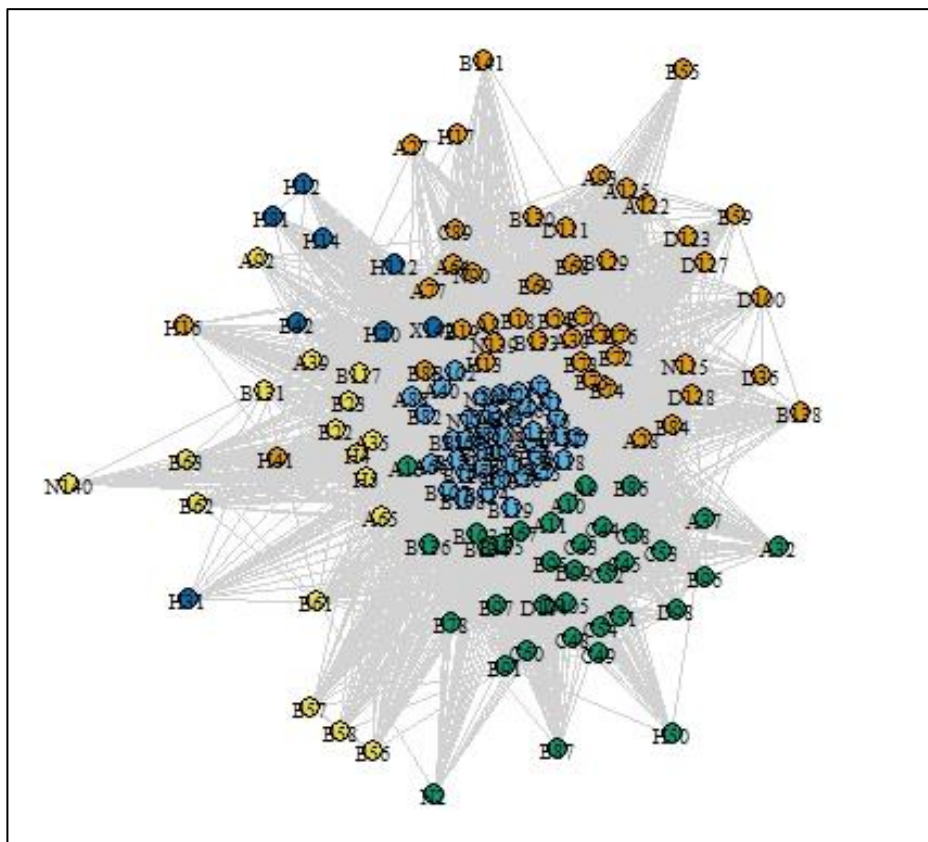
Figure 1: Five different communities obtained with the Multi-level community detection algorithm in *igraph*. Nodes that belong to the same community are highlighted with the same colour, while the letters indicate the type they belong to. Community 1 is in orange, community 2 in light blue, community 3 in green, community four in yellow, community 5 in dark blue.

Each motif was then extracted from each community and reported in table 2.

COMMUNITY 1	COMMUNITY 2	COMMUNITY 3	COMMUNITY 4	COMMUNITY 5
Spinning Task	Absentation (Abs)	Absentation of Youngsters	Interdiction: "Do not"	Competition between Heroine and stepsister
Taste of Food	Abs: Death of Adult	starvation	The interdiction is violated	Heroine is sent away to catch water
Sleep	Order	F9: Food provided	Abode	Heroine catches a fish
Hidden eye	Order: Heroine has to mind animal	F9: Ear cornucopia	Hearth Abode	A2: H. is robbed of the magical agent
TK: villain tricks the hero	Reconnaisance (Rcs)	Feign illness	--> Father departs	d: Heroine goes to the mother's grave
Villain trick the mother to pass between her legs	Rsc: Heroine is spied	Villain/false hero know about the HA	D2: interrogation from Father	F is transported by animal (bird)
T: V persuades H to kill her mother/SM	Delivery	A:H is shut up	E2: Heroine says what she wants (greetings)	Preventing going to try the shoe
Tk. V persuades heroine to convince father to marry her/convince father	7a: Ill-treated heroine at home	A13: order to kill the animal	A11: Mother is turned into an animal	Alien type: Aa403

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Cp: hero falls to the trick	know about m.obj	Heroine's flight/escape	A14: Mother is killed	
B: Heroine goes to the mother's grave	A: Villainy	With the helpful animal	D3: Eating taboo	
A12: false substitution with spell	A2: Forcible seizure of the magical helper	Metal forest	Sheep to be sworn	
A9: Heroine is banished	D: Encounter with the Donor	D7: Taboo	Cow to be milked	
Donor sequence	D3: bury the bones	D7: not to touch anything	Old man to be helped	
D3: washing entrails/or to put the hand in it	E: reaction to the Donor	D7: not to speak	F: Food	
D: asks for drink/eat	F: magical agent	E7-: Breaking Taboo	V claims H is not there/does not exist/too dirty to be seen	
D: ask to be freed	F: magic dresses and/or shoes	D9: x3 HA fights against monsters	Hero gives sisters/father flowers and box/objects	
False hero departs	From bones or remainings	E9: Helpful animal wins	U: Villain is forgiven	
E- negative response	a: Lack or desire	E9-: Helpful animal is killed		
F- magical agent not received	D: Villain gives a task to prevent her going meeting place	Donor asked to be killed		

Hero loses f1	G: H. goes to meeting place	f1: Heroine receives magical object		
Hero follows f1	B: dispatched by D	By grave		
Hero arrives at a Devi's house	Meeting place is ball	By rock		
Series of tasks	-->Return from the meeting place	By helpful animal		
Reward	Pr: hero is pursuit	H. strikes the staff/wand		
Punishment to FH	Rs: Hero escapes	Heroine goes to palace		
F5: heroine finds the object inside animal	J: Branding	Dispatched by donor		
Object received	Lost Shoe	G2 H. is found and brought to the palace		
Object in the animal	o: unrecognizable arrival	G2: carried by carriage, horses etc… to the palace		
	K: PRINCE GETS THE SHOE	G1: heroine reaches the palace on her own		
	M: Difficult task	O: Menial heroine at palace		

	M: shoe test	Token object thrown		
	N: Solution	Token object named		
	N: shoe fits	Transfiguration		
	L: False claims	By dress		
	Mutilated foot	With the help of the donor/magical object		
	False hero pretends shoes fit-FALSE BRIDE			
	Ex of the false hero			
	Wedding			

Table 2: Lists of motifs of Type AB divided into the five communities they belong to.

The communities identified in this analysis correspond to tale groupings that can be discerned through a qualitative analysis of the content. Community 1 corresponds to the conglomerate AB+480 commonly found in the Middle East area. These stories have been contaminated by incorporating a plot sequence of type Aa 480 (The Tale of the Kind and the Unkind Girls) where the heroine loses a staff she was using, and in following it arrives into a Devi's place. After successfully performing the task the Devi imposed her, she receives a magical object. Community 2 reports motifs that are usually found in the classic tales of Type AB where the first part corresponds to Type A (killing of the animal; bury of the bones; magical agent received from the bones) while the second part to Type B (going to the ball, losing the shoe, shoe test, wedding).

Community 3 reports motifs that are associated with some stories of Type AB, usually recorded in Scandinavia area, that show contamination from Type C. Here, in contrast with other stories from Type AB, the animal is not killed by the stepmother rather the heroine escapes with him through metal forests, where each time they encounter monsters. The helpful animal is eventually killed, and the heroine receives from him a magical agent before

arriving to the palace of the King where she is employed as a servant (menial heroine) and then eventually married. Community 4 does not find a strong association as the previous three communities. Still, it is possible to identify those stories of AB where the heroine does not follow an order imposed to her and therefore the mother is eventually killed (Greek tradition). Lastly, Community number 5 reports motifs usually found in the oriental Type AB where the heroine does not lose the shoe rather it is transported by a bird to the Prince. In addition, in these tales, after the wedding of the protagonist, a new plot sequence begins which is referred as Type Aa403. Interestingly, Community 2, which represents the traditional tale-plot of Type AB where the first part of A is assembled with the second part of B, is located at the centre of the graph, indicating that these motifs are much higher connected than they are with the other.

It is important to bear in mind that the motifs identified by the community detection algorithm do not strictly belong to only one community. In fact, one issue that has been observed in social network analysis of real-world dataset is that communities tend to be hierarchical and overlapped, that is a node can contemporarily belong to more than one community. Since all community detection algorithms find nodes that belong to one and only community, they cannot account for this phenomenon. However, in this case, it is still a worth analysis to carry out to show that motifs of Type A and B tend to cluster together in forming AB stories as indicated by STRUCTURE.

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