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14

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Herbal landscape



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*in memory of my mother*



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## PUBLICATIONS INCLUDED IN DISSERTATION

- I. Sõukand, Renata; Raal, Ain 2005. Data on medicinal plants in Estonian folk medicine: Collection, formation and overview of previous research. *Folklore* 30, 173–200.
- II. Sõukand, Renata; Kalle, Raivo. 2010. Herbal landscape: the perception of the landscape as a source of medicinal plants. *Trames: Journal of the Humanities and Social Sciences*. 14(64/59), 3, 207–226. doi: 10.3176/tr.2010.3.01.
- III. Sõukand, Renata; Kalle, Raivo 2010. Plant as object within herbal landscape: different kinds of perception. *Biosemiotics* 3(3), doi: 10.1007/s12304-010-9078-9.
- IV. Sõukand, Renata; Kalle, Raivo 2010. Change in medical plant use in Estonian ethnomedicine: a historical comparison between 1888 and 1994. *Journal of Ethnopharmacology*. [Submitted for review].
- V. Sõukand, Renata; Raal, Ain 2008. How the name Arnica was borrowed into Estonian. *Trames: Journal of the Humanities and Social Sciences*, 12(1), 29–39.
- VI. Sõukand, Renata; Kalle, Raivo; Svanberg, Ingvar 2010. Uninvited guests: traditional insect repellents in Estonia against Clothing Moths *Tineola bisselliella*, Human Fleas *Pulex irritans* and Bedbugs *Cimex lectularius*. *Journal of Insect Science* 10:150, available online: [insectscience.org/10.150](http://insectscience.org/10.150).

The contributions of the authors to the papers:

Paper	Idea and research design	Data collection	Data analysis	Manuscript preparation
I	All	All	All	All
II	All	All	All	All
III	All	RS	All	All
IV	All	All	All	All
V	RS	All	All	All
VI	IS, RS	RK, IS	All	All

AR – Ain Raal, IS – Ingvar Svanberg, RK – Raivo Kalle, RS – Renata Sõukand, All – all authors of the paper.

In addition, Renata Sõukand designed the database, initiated and led data digitalization, personally participated in general data digitalization, and was responsible for the responses through the peer-review process.

## INTRODUCTION

*In olden times in folk medicine sauna served as hospital and nature as pharmacy. Neither needed money, but both needed knowledge. Those doing logging work in winter (hard work in itself) were sweating and freezing in turns and this led to rheumatism. Certainly, tea made from marsh tea or sarsaparilla, which ever was at hand, had to be prepared [during the work], and if wisely taken helped indeed. Osvald Kruusa, b. 1904 in Jõhvi parish Kuremäe province.*

The herbal landscape is personal or community-shared knowledge of the medicinal plants available in the surroundings (be it farm garden, local meadow, nearby forest, faraway bog, etc., but also the kitchen-self or the pharmacy store). The herbal landscape develops in the course of people's everyday activities. As plants were traditionally gathered from places visited daily or on certain occasions, the more frequent the visits to the habitat where the plant was growing, the greater the chance that that particular plant would be discovered and used in case of need. Although being a phenomenon of perception, in this dissertation the notion of herbal landscape is primarily used as a model to explain the mechanism of the use of medicinal plants and its changes over time, deepening in this way the understanding of the cognitive and human ecological concepts underlying the use of medicinal plants.

The primary material for the analyses of this dissertation is Estonian herbal lore<sup>1</sup>, collected by the people actually living this tradition and later by professional folklorists, botanists, medical personnel and other interested individuals. It is an oral tradition that was collected and written down according to the folkloristic methodology established already by Jakob Hurt, and preserved mostly in the form of hand-written texts, as a rule without further scientific analyses.

This dissertation consists of an introductory chapter and six articles. The articles include central publications related to the notion of herbal landscape as developed during author's doctoral studies in 2004–2010. They are primarily focused on the inter-disciplinary analysis of Estonian folklore texts on the usage of medicinal plants. The general approach is practical, historical, qualitative and diachronic, and, as appropriate to the data, using ecosemiotic and ethnobotanic methods; considering the complexity of the data, an *ad hoc* approach is applied, including elements of descriptive (articles I, and VI), comparative (article VI), and quantitative (articles IV and VI) methods, as well as a theoretical approach (articles II and III).

The main scientific objectives of this dissertation are as follows:

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<sup>1</sup> Parallel to the terms folklore or “herbal lore”, also the terms “traditional/local/ecological or ethnopharmacological knowledge” have been used in articles IV and VI, since the term “folklore” may not fit the context of disciplines relaying mostly on scientifically documented information.

1. To present an overview of the collection, storage and research concerning herbal lore in Estonia, as well as internationally, and to highlight problems associated with work on archival collections.
2. To integrate the ecosemiotic approach into ethnobotanical research in order to help to overcome some of the deficiencies of folkloric data in the ethnobotanical framework.
3. To outline the conceptual framework for the notion of perceived herbal landscape, developed through the work with Estonian folklore data, which would help to better understand and analyze the inner logics of herbal folk medicine.
4. To test the new approaches for conducting ethnobotanical research based on archival data.

The six papers comprising this dissertation have been arranged according to the logical development of the notion of herbal landscape. Article I gives an overview of the collection and formation of Estonian medical plant lore, and also gives a slight introduction to the research conducted in this field in Estonia. However, since writing this article the author has gathered more profound knowledge on the subject, and the shortcomings of this article are addressed in this introductory chapter. Article II is the first attempt to investigate the idea of herbal landscape and draw the cultural and natural boundaries of it. Article III takes the notion of herbal landscape as a starting point to understand how the plant could be perceived within the herbal landscape and article IV examines diachronic changes within Estonian herbal landscapes during 1888–1994. Article V is a case study examining the situation where a potentially useful species, available at hand, had been named according to an alien taxon not growing in Estonia. The last article (VI) is the ethnobotanical quantitative study on the use of natural insect repellents in Estonia, based on information gathered into the HERBA database presented below.

All the articles that comprise this dissertation analyse a specific example, and although they do not cover all the available aspects of the data (which would be a lifetimes work for several researchers), the framework is laid for future research in this area, not only in Estonia but also internationally, given that similar data is available elsewhere. Hopefully this piece of work will encourage future interdisciplinary and international collaboration.

This introductory paper serves as a unifying chapter for all the papers included into the dissertation. The chapter is divided into 4 subchapters. The first gives an overview of the corpus of Estonian herbal lore, describing its special characteristics and placing it in a wider context. Also, in this subchapter, principles of data selection, digitalisation, editing and categorization into HERBA and analysis of interpretation possibilities of the source texts are given. The second subchapter gives an overview of general approaches to ethnobotany, the position of Estonian herbal lore in an ethnobotanical context, and provides a brief description of the conceptual framework for the herbal landscape, summarizing the outlines provided in articles II, III and IV. The third subchapter presents the short summaries of the articles included in the dissertation. The introductory chapter ends with a short conclusion.

## I. ESTONIAN HERBAL LORE

The scope of this work touches upon the oral herbal lore collected and written down since 1888 by people actually living the tradition and presenting it in the way it is understood within their own culture, not from the point of view of an outsider. That makes the Estonian collection of herbal lore very distinct from the ethnobotanical data that has so far been published internationally, and which consists most often of observations and reports made by non-native scientists. Given the density of records per time-span, square kilometer and population size, this collection is without doubt, if not the largest, then at least one of the largest ethnobotanical archival collections of one local culture in the world. The uniqueness of this material among already analyzed materials meant that this data required special attention and new methods for interpretation.

Although many European countries have similar collections, they have only occasionally been analysed so far, mostly because of the unevenness of the collections and lack of appropriate methods for analysis (for example Allen and Hatfield 2004; Babulka 1993; De Natale, Pezzatti, and Pollio 2009; Luczaj 2008; Tillhagen 1962–1963).

It is important to state that the information of Estonian herbal lore can be tracked back even further than the existing folklore texts allow, although this is not applied in the given work since the collection methods were different. The first known collector of Estonian herbal lore was Baltic-German clergyman and estophile Johann Wilhelm Ludwig von Luce (1756–1842), whose *Heilmittel der Ehsten auf der Insel Oesel* ‘Remedies among the Estonians of the island of Saaremaa’ (Luce 1829), describe local plant-use and vegetation. It qualifies as one of the very first systematic medico-ethnobotanical accounts within a specific area in Europe, remaining the only published work on Estonian plant-use until the fall of the Russian Empire in 1917 (Svanberg et al. 2010). The arguments in the articles included in this dissertation are based on the study of the herbal lore selected from major folklore collections in the Estonian Folklore Archives of the Estonian Literary Museum (listed in Table 1) and on the author’s personal and supervised fieldworks during 2007–2010. Also many ideas presented in the dissertation arose due the author’s long-term work with the ethnobotanical collection of Gustav Vilbaste (which is, however, excluded from some statistical analyses due to still ongoing digitalisation). For example, the understanding of the regionality of the herbal landscape arose while collating texts sent by students from one region, which was later confirmed by data analysis (unpublished).

**Table 1.** List of Estonian folklore collections containing herbal lore and digitised for HERBA in this stage of the research (reprinted from Sõukand and Kalle 2010b).

Abb- reviation	Full name of the collection	Years of collection	No of pages of full collection	No of texts digitised for HERBA
H	Folklore collection of J. Hurt	1860–1906	114 696	906
EKS	Collection of Literary Union of Estonia	1872–1924	2 962	149
E	Collection of M. J. Eisen	1880–1934	90 100	427
ERM	Folklore collection of Estonian National Museum	1915–1925	9 398	168
E, StK	Folklore collection of M. J. Eisen scholars	1921–1927	8 334	49
ERA	Folklore collection of Estonian Folklore Archives	1927–1944	265 098	1880
ALS	Collection of Academic Veterinary Society	1928–1934	4 094	94
RKM	Folklore collection of folklore department of Estonian Literary Museum	1945–1996	447 231	5135
		Sum	941 913	8808

## I.1. Formation of the data corpus

The start of the formation of the corpus of Estonian herbal lore can be traced back to 1888, when Estonian linguist and folklorist Jakob Hurt launched his famous appeal to “active Estonian sons and daughters” to collect, among other folkloristic information, plant uses and beliefs about the plants. “The use of the plants for medical purposes has proven and solid ground and even learned doctors could benefit from folk wisdom.” (Hurt 1989 [1888]). A detailed overview of the questionnaire used by Jakob Hurt, as well as an earlier, but fruitless, questionnaire composed by Johann Georg Nöel Dragendorff, a German-born professor of pharmacy, are given in the article I (Sõukand 2005: 177–178). Although the article gives details of some collections containing Estonian herbal lore, it does not cover the whole scope. In order to better open up the history of the formation of the data, a short overview of the most important collectors and their methods will be given below, but leaving aside the collections made by Jakob Hurt, and others that are properly described in article I, and those few collections by Baltic-German Estophiles that did not follow the general principles of Estonian collections established by Jakob Hurt.

The next fruitful attempt (after Jakob Hurt) to collect medical herbal lore was made by then medical student, later famous doctor, Mihkel Ostrov (1863–1940), who published altogether seven calls between 1891 to 1893 (addressed mostly to pharmacists and other professionals) to collect information about

medicinal plants and their uses. He reported receiving specimens and data, but only data rewritten by Mihkel Ostrov, with identified plant names, is currently preserved in the EKS (see Table 1) collection (more on the collection by Mihkel Ostrov see Kalle 2008: 53–74). The collection of ERA also contains extensive data collected by medical student Jaan Lääts (1909–1990), who did his fieldworks within Põltsamaa and Kolga-Jaani parishes in the 1930-ies.

Although the most systematic and profound collection of Estonian herbal lore, still in the process of being digitized at the time of writing of this dissertation, is not yet included into the argumentations of the articles as a source for medicinal information, it has been used partly, for instance as a source (Vilbaste 1993) for identification of plant species named in the texts, and it is given more attention here. This collection was created by the botanist, conservationist and journalist Gustav Vilbaste (1885–1967). He started collecting folklore already at the age of 17 as a student, sending his works to M. J. Eisen and later, as a teacher at a village school, to the Estonian National Museum and the Literary Union of Estonia. In 1919 he began to study botany at Tartu University and in 1928 defended his PhD at the University of Vienna. During his long life he collected over 8 000 handwritten pages of plant names and uses, having collaborators all over Estonia among teachers and schoolchildren, professional and amateur botanists. Whenever possible, he approached the collectors personally and guided them methodologically, but he also published calls in newspapers and professional magazines. He also received voucher specimens allowing him to relate vernacular names given in the texts to particular species. Later the voucher specimens were separated from the herbal lore and stored within the collection of a larger herbarium that is now maintained by the Institute of Agriculture and Environment at the Estonian University of Life Sciences (Kalle and Sõukand, forthcoming).

It needs to be clarified that after the formation of the Estonian Folklore Archive in 1927 the collecting work was also carried out, in addition to volunteer collectors, by some professional folklorists like Rudolf Põldmäe, Richard Viidalepp, Herbert Tampere and many others. The collection, gathered after WW II and entitled RKM (see Table 1), was intensively and mainly collected by professional folklorists (the most productive have been Mall Hiemäe, Mare Kõiva, Anu Korb, etc.), although volunteer collectors were still sending in a lot of material. In addition to folklorists and non-professional volunteers, medical herbal lore was also collected by some students of botany, the most noteworthy of them has been Aimre Lindre who, in addition to intensive fieldworks in Western-Virumaa, reordered and complemented the ethnobotany card files at the Estonian Literary Museum in 1969.

## 1.2. Database HERBA

Original herbal lore, spread over several thousands of handwritten pages has been difficult to access for researchers. The card files can help to give an overview of the sources, but they cover only a small part of the herbal lore and might be misleading. To overcome this problem, the database HERBA (Sõukand and Kalle 2008) was created. The history of the creation of the database and a detailed overview of the structure and classification system can be found in already published works in Estonian (Sõukand 2007c; Sõukand and Kalle 2009). Therefore in the following, just some aspects of the database, important for understanding its role in the development of the theory of herbal landscape, will be outlined; this is because the creation of the database itself was a part of the author's active preparation for the doctoral thesis.

Since it was first established, HERBA has undergone several changes. When in 1996 the botany student Toomas Sildvee created the very first version of the database, using texts copied from card files, he related the source texts directly to species according to his experiences, excluding the vast majority of the source texts using vernacular names that could be attributed to several taxa. Also, he used biomedical terms to classify the diseases, which created many misunderstandings and problems in analyzing the texts. The author was attempting to fix the second problem with her BSc thesis in pharmacy, written in 1999, creating a new platform for the database, using the same material, but keeping folk disease names. Instead of squeezing folk disease categorization into the biomedical system (cf Etkin 1993; Waldstein and Adams 2006 for clarification of the reasons), the database was provided with explanations of folk diseases keywords. Regarding the author's pharmaceutical background, it took years and some more years of semiotic studies (see introduction in Sõukand 2004) to realize how important it is to fix the first problem as well: texts should be categorized according to the vernacular names of the plants given in the texts. Vernacular names, in turn, had to be related to species and (where needed) to families. This helped to solve the conflict between the *emic* approach of folk medicine and the *etic* approach of science, trying to express its opinion about species compared to folk taxa or needing to identify folk diseases in accordance with medical diagnoses. At least on the level of the database, the *emic* approach was preserved and the possibility for translation from one approach to another was created.

A new period for the database began in 2006 when, within the new project supported by the Governmental Research and Development program "Estonian Language and National Memory", the author began the extensive digitalization of herbal lore from original manuscripts. Texts were selected, copied, checked and edited according to contemporary language rules, but so as to retain dialectal peculiarities and thus, regionality. Edited texts were classified according to vernacular names and disease keywords to the entirely new database format. During this work, many obstacles had to be overcome, many new solutions for the database created, and new methods for analyses developed.

Being a corpus of source texts and covering large scale in space and time, HERBA has strong advantages over time- and space-limited fieldwork. Such a resource, covering the period of over a century, if organized and approached properly, can lead to new discoveries and understandings. Still, there are many aspects of folklore that need to be interpreted and the level of interpretation freedom acknowledged before an ethnobiological analysis can be provided.

### 1.3. Interpretation of the source texts

The source text is an unit consisting of indivisible information, usually covering the use of one plant for one disease, one plant for several diseases or the use of several plants to treat one disease (in one recipe). Before starting to analyze the source text, the researcher has to realize that folklore is far from being homogeneous and represents spatial reflections of knowledge of those people who happened to answer to the call or happened to be questioned. Also, the bits of information in every text are of different density and tendency.

#### 1.3.1. Heterogeneity and fragmentariness of folklore

Regardless the fact that all folklore has been collected according to folkloristic methods, the material reflecting herbal lore, perhaps because it is in a folkloristic border area, has been collected very unevenly and often without any standards, with a methodology differing from the modern ethnobotanical one. To be able to interpret the data the researcher has to be aware of the fragmentariness of the information (as not all the population was questioned) as well as the unevenness of the answers and the heterogeneity of the folklore, since the people questioned possessed and transmitted different amounts of knowledge.

Taking into the account the information density, the source texts for herbal lore may be divided into three conditional categories. Although it is quite impossible to draw a strict line between following categories, the attempt to classify them gives us some overview of the structure of the material.

The **first category** is made up of brief notes, the contents (and also the controversiality) of which can be understood only after a larger quantity of the material has been processed. Here are two examples of source texts from this category:

*Plantain leaves were put on wounds.* ALS 7, 255 < Jõhvi p., Jõhvi v. – Nikolai Rågo < Miili Paju, b. 1885 (1934)

*Treatment of St. Anthony's fire. Dress with scrapings from bird cherry.* E 51789 (5) > Paistu p., Kaarli d., Ridala v. – Anna Johanson (1921)

This material provides the greatest variation in possibilities, as there are often several unknowns in the “formula”. Estonian “*roos*” translated in the second

example text as “St. Anthony's fire” could be furuncle or abscess or just a pink pigment spot on the skin. “*Tieleht*” translated in the first text as “plantain leaves” could be one of four species of the *Plantago* family. Thus, the information this kind of source texts bear, may even be misleading, as there are no certain reference points to rely on. From the pharmaceutical point of view those source texts are of little or no use, but, being predominant in the collected material especially among later texts (from the second half of the 20<sup>th</sup> century), they bring in diversity and a possibility to “play around” with different ideas on relations between diseases and plants and also on the process of choosing the medicinal plant.

The **second category** includes more detailed explanations about the use of the plant (recipe for collection or preparation, description of the plant etc.):

*Wart – cut the potato into half, press the wart three times with these halves, put the potato back together and place it in the ground to rot. When the potato is rotten, the wart has disappeared.* RKM II 111, 157/8 (494) > Kihelkonna p., Mäebe v. – Eda Aer > Ann Järvela, b. 1877 (1961)

*Boils were often not treated at all. They were just let heal by themselves, and to make the furuncle “run” sooner (make the pus flow out), colt's foot was put on the boil, or boil plaster was brought from the pharmacy.* ERA II 203, 407 (83) > Otepää p., Aiaste v – Artur Kroon (1938)

This category of source texts is quite concrete, restricting the possible interpretations and opening a new dimension of the transmission of folk herbal heritage. The way the preparation of the remedy is described gives us the information on attitudes toward medicine preparation and the description of the herb (its growing site, appearance, taste, other qualities) or the disease gives a notion of the role that a particular plant may play in the worldview of the respondent. Thus from the point of view of cultural studies, this material is also quite interesting and promising. These texts are more characteristic of earlier informants, as the correspondents were probably aware that no compendium on the usage of folk medicinal plants in Estonia existed at that time. Also, the early collectors of Estonian folklore clearly identified the need for more detailed explanations about plants used and diseases cured, and this guided collectors to include more than just keywords, as is usual for later source texts. From the pharmacological point of view this data is most promising, as it is possible to restrict the list of potential species to work with.

Into the **third category** the more informative material may be placed, which, in addition to the description of the plant use, also opens some deeper aspect of the plant or the disease. These texts are made up of lengthier and more detailed descriptions. They are found less frequently, and the information they bear is often unique. Such source texts demand a “personal approach” – they may

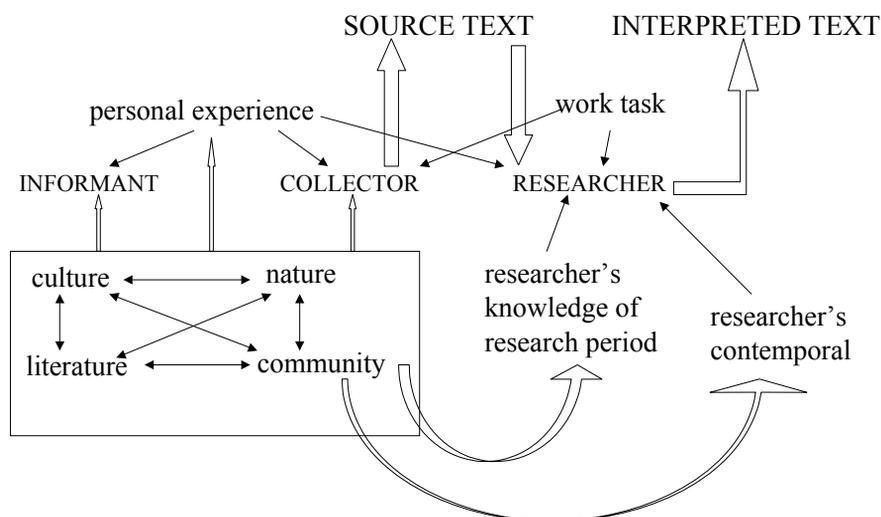
include detailed knowledge of folk medicine or be the “creation” of the correspondent.

*To avoid backache during the harvesting of rye, a snake must be driven across a leather belt or a woven belt. The snake surely does not want to go over the belt because of its varied colors, and to make it cross the belt; the snake is driven with a rowan-tree rod since it is believed that the rowan-tree rod has divine power for making the snake across the belt. E 50821 > Põltsamaa p.– Juhan Nugis (1916)*

The source texts of the last category are presented quite evenly throughout the whole material, maybe only slightly more frequently in the compendium of earlier source texts. These texts tell a story, pull the reader into the fragment of reality of the informant and transmit the power of belief in the potency of the given medicinal herb. From the pharmaceutical point of view those texts have little or no value and have usually been left aside by earlier researchers approaching from the pharmacological side, but they may tell stories of wider cultural importance.

### **1.3.2. Model of the construction of the source text and interpreted text**

To see the whole complexity of the interpretation of the source text, several aspects have to be incorporated into the model. Generally, the information is collected by a “collector” who questions the “informant”, although sometimes one stage is omitted (the collector records his or her own personal knowledge) or the use of the informant is not acknowledged, as often happened in the earlier texts. The text written firsthand is affected by several factors, such as the informant’s knowledge of culture, nature, literature, expectations of the collector, as well as influences of the community, etc. This concerns mainly the earlier source texts, not collected by the researcher him or herself. A second group of factors concern the researcher and include literally the same aspects, maybe even with the same shifts. Also, the final result is affected by the degree of interest of the researcher to consider the context behind the text under examination. The simplified model of the formation of interpreted text is given in Figure 1.



**Figure 1.** The model of the web of the formation and interpretation of the source text

The knowledge underlying the source text is complex and interrelated. Knowledge of culture and nature are affected by each other: culture has developed in a certain natural environment that in turn has been and is constantly affected by nature. Culture is constantly recreated by the community (family, village, parish people) and reflected in and affected by the literature (especially popular medical books and almanacs, school books, later herbals). A community lives in a certain natural environment, constantly changing it according to its needs and beliefs, and creates or demands certain literature, etc. This all can be called shared community knowledge. In addition to that general, common knowledge, personal experience with medicinal plants affects the formation of the source text, as something experienced personally is better remembered and prioritised. Although it is difficult to determine from most source texts whether the knowledge presented is personally experienced or not, the effect of personal contact with a plant cannot be underestimated.

From the side of the collector, the same or similar forces affect him or her and determine the way in which the questions are asked or the reports formulated, depending on how much information overlaps with the collector's own experience, expectation and need for self-realization, etc. In addition, the approach of the collector is affected by the work task, or by the questionnaire or methodology available at the time of collection, and by his or her previous experience in folklore collection or methodology.

Similar circumstances affect the researcher, although a certain time span already disconnects him or her from the other parties. The task of the researcher is to interpret the text according to what he or she sees behind the curtain of simple words, describing the whole scope of the phenomena very briefly. For the researcher there is an immense temptation to interpret these words in the

first possible way, but by moving closer to the initial narrative hidden in the telegraphic text one can open more and more interpretation possibilities, which gives the opportunity to retell the story in several different ways. Here, the researcher must be aware of the common knowledge of the informant and the collector, and also be able to interpret it despite the changes that have occurred in course of time since the text was collected. He or she may also be able to consider the personal experience of the informant and or collector, if it is possible to identify them. The specified working objective of the researcher and the methods used are of crucial importance, as different methods can give contradictory results from the same data (for examples see Sõukand 2004 or Sõukand 2007a, where a deeper analysis of plant names reveals information considerably differing from the “first guess” data). Having several possibilities for interpreting the text places a great responsibility on the researcher, often requiring great effort to avoid misunderstanding the text and misinterpretation of the scope of data.

Indeed, the source text itself is a complex representation of the variety of phenomena underlying folk herbal knowledge, often including several layers. Every single analysis may reveal only part of what is hidden behind the words and in some cases several approaches from different angles are required to ensure the best possible understanding of the source text.

## **I.4. Variety of interpretations**

Frequency and amplitude of usage of an herb in folk medicine is affected by several factors. To name only some, examples from the articles written by the author (not included in this thesis) are analyzed below.

### **I.4.1. Plant name**

In Estonian folk medicine, many plants bear their name according to the disease they are supposed to heal. One example, analyzed in Sõukand 2004, is so-called “runner herb”, the name stressing the fact that the herb is used for healing “runner” (est *jooksva*), a disease that constantly moves from one part of the body to another and that in academic medicine can be classified as arthritis, joint pain, or rheumatism. There are 48 different species known as “runner herb” (est *jooksvarohi*) or herb for healing “runner”. Eight most popular and widespread are: Creeping Spearwort *Ranunculus flammula*, Bittersweet (*Solanum dulcamara*), Common Speedwell (*Veronica officinalis*), Bird’s-eye Speedwell (*Veronica chamaedrys*), Tall Buttercup (*Ranunculus acris*), Twinflower (*Linnea borealis*), May-Lily (*Maianthemum bifolium*) and Silverweed (*Potentilla anserina*). All these plants, although different in appearance, have some specific characteristic (the way and the place the plant grows, the smell, the other use in folk medicine), that might be affecting usage for and naming after

“runner”. None of the culturally or agriculturally important plants, also widely used for healing “runner”, as for example birch, stinging nettle, pine etc, were named “runnerherb” (Sõukand 2004).

#### **1.4.2. Cultural importance**

Cultural importance, as well as a culturally “sound” name gives an herb a strong priority for being used as a medicine. An example of the potency of the name is so called “ninemighty” (est *üheksavägine, vägihein*), belonging to two species of mullein (*Verbascum*). Generally, Estonians did not draw any distinction between these two; at the same time, in pharmacognosy the medical herb is only Common Mullein *Verbascum thapsus*, whereas Dark Mullein *Verbascum nigrum* is not used. Another example here is Rowan (*Sorbus aucuparia*) and Juniper (*Juniperus communis*), named “potent” in folk medicine as they are reported to have a “cross on their berries”. Closer observation reveals that rowan has a sign with five branches, and juniper with three. Thus, Estonian herbal folk medicine, at least in the 19<sup>th</sup> century, relied to a great extent on a tradition that reflects the cultural concepts held with regard to the plant (Sõukand 2007b).

#### **1.4.3. The own and the alien**

Alien species that have been introduced into Estonian cultural gardening and also into the cognitive medical field before the 20<sup>th</sup> century mainly by local Germans were sometimes more valued in folk medicine than locally growing herbs, which can be called “the own”. Still, in order to become popular, the herb had to become at least partly “own”, retaining just maybe a flavor of being “alien”. Practically that means that the plant actually used had to grow close to the user, being either cultivated, naturalized or sharing its name with a locally growing plant. As an example, two types of “invaders” that became two of the most popular medicinal herbs of Estonian folk medicine are characterized: one of them became “own” through natural acclimatization and the other through cultural acclimatization (Sõukand 2007a).

The first of two species of Chamomile (*Matricaria sp*) was introduced to Estonian gardening in the middle of the 17<sup>th</sup> century (Annual Chamomile *Matricaria recutita*) and the second in the middle of the 19<sup>th</sup> century (Pineapple Mayweed *Matricaria matricaroides*) (Vilbaste 1993). Of the two species, the first did not spread beyond gardens, since it requires some human care. The later guest expanded quickly into the local countryside and occupied waysides and field paths. Although they were growing in totally different places and had totally different appearance, local people did not differentiate between the two species at least on the level of the names. As the folk name “*kanaperse*” (also used for a local and externally similar species *Leucanthemum vulgare*) that

could be translated as “chicken’s butt” sounds like a sign of bad taste, the German word “*Kamille*” was changed to “*kummel*”, more convenient for local language and formal context.

The other “invader” is *arnika*. Local German landlords’ wives were promoting the use of Arnica (*Arnica montana*) since the beginning of the 18<sup>th</sup> century. But *Arnica montana* does not grow in the wild in Estonia and even does not develop well if cultivated. But still, Estonian people knew several “arnicas” reported to be found in local forests, which they were using as homemade medicine in substitute for real *Arnica*. People considered most of the yellow flowers to be “arnika”, but according to scientific classification these were mostly species from the *Leontodon*, *Hieracium*, *Crepis*, and *Solidago* families (Vilbaste 1993). There are 19 different species in Estonian ethnobotany recognized as “arnika”, among them also Chamomille.

## 2. HERBAL LANDSCAPE

### 2.1. Estonian herbal lore within ethnobotanical settings

The notion of ethnobotany can be explained as coming from “ethnology” (study of culture) and “botany” (study of plants) and is a scientific field that investigates intimate activity context between people and plants (Balée 1994), or in short, — knowledge about plants. In 1895 a botanist from the United States, John William Harshberger coined the word *ethnobotany* as the use of plants by aboriginal people. Ethnobotanical studies in the modern sense were introduced in Europe by a few local scholars even earlier, at the beginning of the 19<sup>th</sup> century (review on the history of European ethnobiology is given by Svanberg et al. 2010).

Although international interest toward ethnobotany has been growing over the years, most of the research is conducted in so-called third world countries, where native inhabitants have little or no contact with academic medicine (Logan and Dixon 1994), whereas “virtually all of the work on human chemical ecology and medicinal plant selection criteria has been done in the Americas” (Waldstein and Adams 2006). Countries with good infrastructure, medical services, and highly literate inhabitants have been poorly researched for several reasons. One of them is the belief that their ethnobotanical knowledge is strongly influenced by contemporary academic medicine and publications on plant use (Heinrich, Pieroni, and Bremner 2005). That is true to some extent, especially for the recently collected ethnobotanical material.

Among professional ethnobotanist in contemporary Europe, it is not the search for new medicines that guides researches. The questions the modern European ethnobotanists are most interested in are biocultural domains that develop in the interactions between human beings and their surrounding landscape, including perceptions of the plants, local management, and use of biological resources (Svanberg et al. 2010). Also, European ethnobotanists have a large body of data collected in the last century by ethnographers and linguists, which need systematisation. This work has already been started (Babulka 1993; Luczaj and Szymanski 2007; Sõukand and Kalle 2010b), but there is definitely more to be done (Tillhagen 1962–1963).

Linguistics has been the ‘official channel’ for ethnobotany in Russia and other post-communist countries (Svanberg et al. 2010) after all, it was language, that “enabled people to share and pass on experiences of plant properties and their effects against disease” (Waldstein and Adams 2006). For the rest of the world, medical ethnobotany is the science in-between botany, pharmacology and anthropology and its writings have followed, and still follow, the structure of “hard science” articles, requiring large amounts of quantitative data. According to Elias Ann Berlin and Brent Berlin, medical ethnobotany consists of three components:

- “Identification and broad scale collection of plant species used to treat recognized health conditions.
- Scientific botanical determination to the specific level, of all collections and documentation of their regional distribution.
- Determination of the most salient medicinal plant species as demonstrated by the frequency of collection and consensus on medical use.” (Berlin and Berlin 2005: 238)

Berlin and Berlin also stress the importance of conducting medical anthropological and ethnopharmacological analyses simultaneously in order to get the whole picture. Although simple listings of plants used to treat certain culturally recognized health conditions mostly belongs to the past for contemporary ethnobotanical publication practice, it was still reality just few decades ago. Proposing anthropological methods for ethnopharmacology, American ethnobotanist Nina Etkin (1948–2009) suggested: “we want to advance beyond disembodied inventories of plant use that lack such behavioural details as criteria for suggestions, mode of preparation, and therapeutic or other (e.g., nutritive) objectives. Although inventories provide a basic vocabulary, they do more to decontextualize and homogenize people's experience with botanicals than they help to explicate preventive and therapeutic strategies...” (Etkin 1993: 94).

The classical approach to ethnobotanical studies requires fieldworks, collection of voucher specimens and large quantitative studies. To evaluate the reliability of the information, several measuring methods have been developed, for example the use of multiple-choice questionnaires, which are considered reliable in their measurement of task-specific cultural knowledge (Reyes-García et al. 2004). However interesting exceptional texts may sound for the researcher coming from humanities, ethnobotanical study requires validation of the data. “A single collection of medical plant is essentially useless from a medical ethnobotanical perspective. [...] the views of a single informant are equally as uninformative if that informant is the only person” (Berlin and Berlin 2005: 251). Although, there can be exceptions (Berlin and Berlin 2005: 263 (endnote 12)), the cultural knowledge can only be inferred from consensus (Romney, Weller, and Batchelder 1986).

Being an in-Europe study and having long-scale diachronic data with the number of records for the majority of the used plants satisfying even the most pretentious quantitative research criteria, the present study not only fills the gap in Estonian ethnobotanical research, but also opens up new perspectives for deeper implications of humanitarian approaches to medical ethnobotany. Herbal landscape and all its components, being a theoretical construction of a researcher, are built upon empirical data provided by the bearers of the given culture. As such, it takes its unique position within the scope of medical ethnobotany, still being applicable for future international research.

## 2.2. Ecosemiotic approaches to ethnobotany

Ecosemiotics was first defined by Winfreid Nöth as “the study of the semiotic interrelations between organisms and their environment, emphasizing that the central there is *organismus semioticus*, not *homo semioticus*” (1998: 333). Kalevi Kull finds, that such definition makes it difficult to distinguish eco-semiotics from biosemiotics or from the *Umweltlehre* of J. v. Uexküll (1998: 348). Instead, he proposes a new definition emphasizing cultural interaction with nature: “the semiotics of the relationship between nature and culture, which deals with the semiosis going on between a human and its ecosystem or a human in one’s ecosystem” (Kull 1998: 350). The relations between humans and plants are deeply cultural, thus, ecosemiotics provides powerful tools to analyse the processes underlying ethnobotanical phenomena. In the following, some theoretical approaches are outlined that allow the development of new concepts suitable for the ethnobotanical phenomena and the data.

### 2.2.1. Perception of landscape: Almo Farina’s approach

Bringing the human dimension, and through that, ecosemiotics into the landscape theory allows the development of several conceptual frameworks that can help to model and analyse the interactions of humans with their environment. For example, the therapeutic landscape, the concept developed by health geographers, is a remarkable tool for the analysis of the contribution of physical, social, and symbolic environments to physical and mental health and well-being (Gesler 2009). The model of cultural landscape proposed by Italian ecologist Almo Farina emphasizes: “the relationships between human activity and the environment have created ecological, socioeconomic, and cultural patterns and feedback mechanisms that govern the presence, distribution, and abundance of species assemblages” (Farina 2000: 113). Landscape paradigms have often been utilized to explain the complex phenomena of interaction of humans and other nature and thus can be utilized well in the ecosemiotic approach to ethnobotany. Farina (2006) compares several definitions of landscape from different cultural and scientific approaches and finds most suitable the one defining landscape “as a piece of land which we perceive comprehensively around us, without looking closely at single components, and which looks familiar to us” (Haber 2004, cited from Farina 2006: 5). Farina continues, “when the organism is man, the landscape is a broad area composed of a mosaic of patches, ecotopes and cultural elements” (2006: 5). Further, dividing cognitive landscape, as based on Jakob von Uexküll’s concept of *Umwelt*, into three types, he defines an observer based landscape, explaining it as “the piece of the real world perceived by people by using a cultural filter. ... experience and learning are stocked into temporary memory that does not survive the organism’s death” (2006: 16), but have to be experienced or transferred through cultural mechanisms. American landscape ecologist Joan Iverson Nassauer states that “culture and landscape

interact in a feedback loop in which culture structures landscapes and landscapes inculcate culture, and cultural conventions and customs directly affect what people notice, find interesting and prefer about the landscape” (1995: 229, 233). Thus, herbal landscape is created by culture, and in turn, it creates the culture itself.

### 2.2.2. Plant within the landscape: Peirce’s sign

To realise how the orientation within the herbal landscape occurs, we need a method for understanding the idea of the perception of the object within the individual herbal landscape. For this purpose we can use the semiotics of Charles Sanders Peirce as a guide, especially his fundamental triadic concept of the sign. In his works, Peirce introduces an idiosyncratic and varying terminology of sign relations. Although Peirce has referred to his sign model as consisting of sign, thing signified, and cognition produced in the mind (CP 1.372), the more often cited and used forms of his terminology are given in his elaborated definition:

A sign, or representamen, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the interpretant of the first sign. The sign stands for something, its object. It stands for that object, not in all respects, but in reference to a sort of idea... (CP 2.228)

Representamen is a perceptible object (CP 2.230) that functions as a sign, being the first correlate of a complete triad. The second correlate of the sign is the object, the material object of the world or a mental or imaginary entity, which may in the borderline case of self-reference be the same as the representamen (CP 2.230). The interpretant is a meaning of a sign, also defined as signification or interpretation (CP 8.184); it is something created in the mind of the interpreter (CP 8.179). This something is a new sign created in the mind of the person and in turn becomes the representamen for another sign. This creates the semiosis, a series of successive interpretants (CP 2.303).

A simple and quite obvious application of this model can be as follow. A professional botanist looking at a plant sees specific features ascribed in the botanical key that help to detect the species during the vegetation period. A layperson looking at a medicinal plant sees the features ascribed to the plant that is supposed to heal (Sõukand and Kalle 2010a). The criteria for the features can vary widely; it can be the special appearance of the blooms, leaves, or roots; or its taste, smell, habitat etc. This feature becomes a sign, a *representamen* that stands for a person searching the herbal landscape for a plant, creating an *interpretant* (the vision of the medicinal plant, its preparation, use etc). Although the *representamen* stands for its *object*, the taxon, it represents the taxon only in given conditions (geographical and cultural). The *object* itself, depending on

circumstances, can be an individual plant, botanical species, or, more common for folk medicine, a vernacular species (covering part of the species, several species, genus, or in a rare circumstances, family).

*Representamen* as a sign assigned to the medicinal plant seems to be related to the Doctrine of Signature (DOS), the theory that physical characteristics of plants reveal their therapeutic value; its historical development and philosophical background is given thoroughly by van der Broek (1987). Nevertheless, the manifestation of DOS in Estonian herbal lore is quite rare (Sõukand 2007b) and is more a mean of effective preservation and dissemination of the information, as suggested by Bennet (2007).

### **2.2.3. Orientation within herbal landscape: Ingold's approach**

To see how the orientation within the herbal landscape takes place, it is good to implement British social anthropologist Tim Ingold's ideas of transporting and wayfaring (Ingold 2000, 2006, 2009). Also, the concepts of traditional knowledge "generated in the practices of locality" (LTK) and modern construction of traditional knowledge (MTK) (Ingold and Kurttila 2000: 184), explain the different approaches to maintaining the knowledge on plant utilization, first through everyday practice learned from another practitioner, second from books, without the knowledge ever having been actually harnessed in real life.

"Knowing, like the perception of the environment in general, proceeds along paths of observation" (Ingold 2000), which is a prerequisite for LTK to be practiced. Ingold's image of the "mapping" traveller suits well for characterizing the lived tradition of plant use and the orientation within the 19<sup>th</sup> century herbal landscape.

The traveller or storyteller who knows as he goes is neither making a map nor using one. He is, quite simply, mapping. And the forms or patterns that arise from that mapping process whether in the imagination or materialised as artefacts, are but stepping stones along the way, punctuating the process rather than initiating it or bringing it to a close (Ingold 2000: 230–31).

Tim Ingold describes the route of a transported modern traveller in the following way: "in between sites he barely skims the surface of the world, leaving no trace of having passed by or even any recollection of the journey" (Ingold 2006: 25), and this explains pretty well the situation for a specific plant search in TMK context. In Ingold's terms (2006) crossing the field from point A to point B is going across, the transportation, and all other signs are left unnoticed. On the other hand, the book is like a map and the reader just continues to use the map when entering the herbal landscape, navigating among the network of transportation (Ingold 2009), losing everything but the point of destination.

### 2.3. The definition of herbal landscape

The way community accepts a new herb into the cultural landscape or how another herb acclimatizes in the natural landscape is the measure of sustainability and flexibility of healing traditions in the given society. If we draw a correlation with folklore, landscape is also spatial (heterogeneous, fragmentary, episodically remembered etc). Although herbal landscape theoretically already consists in the wider definition of the landscape (being a higher level of abstraction), as an interaction between culture and nature, it is important to define one more new perception of the landscape, to capture the phenomena existing among rural Estonians and concretise a model for analysis. Herbal landscape has been defined as:

A cognitive field associated with plants used to treat or prevent diseases, established within specific cultural and climatic zones either personal or shared within a certain group of people (Sõukand and Kalle 2010a, with some corrections).

The term *cognitive* refers to the dynamic process of knowing (cf *cognitive map*, the term first coined by American psychologist Edward C. Tolman (1948) as representation of the environment that allows the making of decisions about orientation in it)<sup>2</sup>. *Field* is more static, representing an area, covered by this specific knowledge. As Farina (2008: 78) says, “signals from the landscape are transformed into signs by cognitive process only when a specific function is active, otherwise such signals are not carriers of meaning”. Thus the prerequisite for entering the herbal landscape is some health condition needing treatment or prevention. It can be either a search for medicine, healthy food or even recreation: everything needed to remain in or retain the status of health provokes the evolution of the herbal landscape in the persons mind. One may argue, that this kind of thinking can be peculiar to Estonians, but most probably it characterizes the existence of a long-term tradition of plant use and the development of a consistent intimate activity context between people and plants. Once created, the herbal landscape remains with the person or community and is constantly being upgraded by the knowledge developed within (community exchanged, personal experiences) or coming from outside (media, books) (on different ways of recognition of plants see Sõukand and Kalle 2010a). Herbal landscape also has a seasonal dimension. Recognizable plant features are present only in certain seasons (except for evergreen trees and pot plants grown on the window sill). Working (and usual plant collection) sites are normally visited in the course of seasonal activities.

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<sup>2</sup> The term “cognitive map” has also been used by Estonian anthropologist Aivar Jürgenson, referring to the specific mushroom and berry picking sites adopted by people. “Mushroom and berry picking sites were fixed for years and acquired a position on the cognitive map of [berry and mushroom] pickers” (Jürgenson 2005: 62).

Taking this into account can help to explain, for example, why original knowledge of plants gleaned by one set of inhabitants may be clearly distinguished from that of close neighbours, or why some of the knowledge, learned through personal experience within the herbal landscape, remains alive even within already urbanized generations.

### **2.3.1. Natural boundaries**

Many authors have already discovered positive correlation between accessibility of plant species and their perceived usefulness, indicating that more frequently accessed plants are considered more useful (Thomas et al. 2009, for example) and plant knowledge and intensity of plant use diminish with distance traveled from human settlements (Martin 2004), nevertheless the mechanisms by which humans identify and choose such specific resources like medicinal plants, remain largely unknown. According to Estonian herbal lore, people choose for healing those plants that not only tolerate human activities (hemeradiaphores), but 40% of the used species prefer moderate to strong human impact and communities changed by human activities (apophytes); 23% of plant taxa are anthropophytes – either aliens or those run wild from cultivation or otherwise surviving only in communities significantly changed by human activities (article IV). The closer a plant grows to an everyday human path the more extensive is its use. Often the habitat of a plant is described as being situated in the *home forest*, *home meadow*, or *home field* – the territory somehow belonging to the person's personal space. The territory existing outside this familiar space is *terra incognita*, visited only on special occasions such as logging or other tasks. On these occasions, distant-growing plants were collected, and often used *in situ* (Sõukand and Kalle 2010b)

Although Estonia covers a relatively small area, its territory can be divided, according to plants growing on their range limit, into 12 plant-geographical regions (Lippmaa 1935). The considerable variety of plant regions is the result of a matrix of good water availability, long coastline, and climatic differences in east-west and north-south directions. Plant species richness is greatest in the western part of Estonia, decreasing in an easterly direction; at the same time the number of registered species remains the same in the north-south direction (Kull et al. 2004). However, these regional differences are only indirectly represented in folk knowledge.

### **2.3.2. Cultural boundaries**

The regionality of other folklore genres in Estonia is the well-known fact, but the regionality of herbal lore has hardly been addressed earlier. Church parishes (*kihelkond*) are historical territorial units that were in wide use until the 1920's; even nowadays many people identify with their home-parish. The borders of the

parishes remained unchanged since the early Middle Ages, and native Estonians, being serfs, were restricted from moving around in the country. Hence, the division into parishes is used in linguistics (to delimit sub-dialects), in ethnography, folkloristics, etc, and should be used in historical ethnobotanical research as well. A community living for generations in one settled place developed the habit of using specific plants out of many possible alternatives that might heal a concrete disease. Within another nearby community, the same plants present in nature may be abandoned in favor of other alternatives. Thus the local range of the utilized plants is rather restricted, while nationwide herbal use is very diverse (Sõukand and Kalle 2010c).

Herbal lore can also be conditionally divided into local and global knowledge. Local herbal lore is related to native plants and requires direct contact with a person possessing the relevant knowledge at the moment when the medicinal plant is needed. The person seeking help acquires the knowledge passed down through generations, continuing in this way the local herbal tradition. The transferred knowledge is personal; learning takes place most likely in a natural context. Such communications cause considerably fewer misunderstandings than other ways of acquiring herbal knowledge. Global herbal lore is based mostly on non-native species or sometimes adds new uses to local plants. The disseminators of global herbal knowledge are usually books, or contemporary media such as television and the Internet. Almost all popular medical books in Estonian have brought in global knowledge on herbal use. Healing practices learned from books or other visual or audio sources require much more interpretation of the written (heard) text and of the depicted plant. This can potentially lead to many misunderstandings, not only in the methods of use, but also in the identification in the field of the plant described or depicted in the source, as the recognition relies only on visual sense (see also Kalle and Sõukand 2010).

## **2.4. Herbal landscape as a model for analysis**

Although the herbal landscape is a personal or shared vision of medicinal plants available in the surroundings (be it kitchen shelf, garden, meadow, forest, bog or even pharmacy stocks), in the current dissertation and related articles the notion is mainly used as a model to explain the mechanism of changes in the use of medicinal plants over time or within one phenomenon occurring within the herbal landscape. Various approaches involving the use of diachronic data for ethnopharmacological purposes (leading to drug discovery) have been outlined by Heinrich et al. (2006), but the quality of older, accidental data differs greatly from the quantitative result of modern fieldworks, making the use of earlier scanty data-sets complicated (De Natale, Pezzatti, and Pollio 2009), and the resulting patterns of changes in plant use difficult to determine. That means that there are only a few places in the world where diachronic quantitative comparisons stretching over a longer period of time may be possible (Heinrich

et al. 2006; Łuczaj 2010). Data presented in HERBA allows us to examine the changes within the Estonian herbal landscape from the 19<sup>th</sup> century up to the end of the 20<sup>th</sup> century with regard to an infinite number of variables. Two possibilities for analysis are given in the articles included in the dissertation.

### 3. SUMMARIES OF ARTICLES

Article (I) **“Data on Medicinal Plants in Estonian Folk Medicine: Collection, Formation and Overview of Previous Research”** (written together with Ain Raal) concentrates on the process of the formation of the collections of the Estonian Folklore Archives containing herbal lore. Those collections date back to the middle and end of the 19th century. The earliest part of the folklore materials is based on traditional Estonian ethnobotany, which is only slightly affected by written sources, since only a few books and almanachs were published in the local language before the end of the 19th century. The first appeal to collect folklore on ethnobotany was made in 1877 by a well-known pharmacist, Johann Georg Noel Dragendorff, but the next collection campaign initiated by Jakob Hurt in 1888 yielded already impressive results. The article provides a detailed survey of the collecting and preserving of Estonian folk medical lore from the 19th century onwards and casts light on the availability of medical care in Estonia at the time of the first appeals. Thereafter, the authors take a look at some literary sources that may have been influential at the end of the 19th and the beginning of the 20th century. Also, an overview of the most important research publications on Estonian ethnobotany is given and an explicit course for future research charted.

Article (II) **“Herbal landscape: the perception of the landscape as a source of medicinal plants”** (written together with Raivo Kalle) investigates the idea of the herbal landscape, associated with the personal perception of the landscape as a source of *materia medica*. The authors argue that the herbal landscape can be divided into specific smaller units according to several natural and cultural boundaries. This explains why original knowledge of plants gleaned by one set of inhabitants may be clearly distinguished from that of close neighbors. The natural boundaries are, for example, the habitat (community) and geographical range limit of plants. Cultural boundaries are, for example, the cultural space that influences the person, the peculiarity of a given language, and the availability of education, popular books and other media regarding plant use. Nevertheless, Estonian natural herbal culture can be viewed as one large-scale herbal landscape.

Article (III) **“Plant as an object within the herbal landscape: different kinds of perceptions”** (written together with Raivo Kalle) takes the notion of herbal landscape as a starting point. We argue that the features by which a person recognizes the plant in the natural growing environment is of crucial importance for the classification and use of plants within the folk tradition. The process of perception of the plant can be divided into analytical categories according to the sign concept of Charles Sanders Peirce. Whereas the plant can be seen as the *object*, the feature(s) the plant is recognized by is (are) the *representamen(s)*, and the image of the plant within the herbal landscape can be understood as the *interpretant*. Different methods of perception of the signs within the herbal

landscape are demonstrated, comparing the herbal knowledge acquired from the herbals with the method of plant recognition learned in the traditional way. The first can be viewed, using the terms of Tim Ingold, as transportation: using plant features to go across, leaving all other signs present in the landscape unnoticed. The wayfarer, guided by signs learned within the context of the surroundings, walks along and perceives the plant as a part of the herbal landscape. Although the examples analyzed come from Estonian herbal lore, the method of analysis can be applied in ethnobotanical research worldwide.

Article (IV) **“Change in medical plant use in Estonian ethnomedicine: a historical comparison between 1888 and 1994”** (written together with Raivo Kalle) analyses semi-quantitatively 8 selected collections from the Estonian Folklore Archives of the Estonian Literary Museum according to the human impact factor on plant growth. During slightly more than a century 540 species with known human impact factor have potentially been used. Although in different periods of time the number of used plants changed, the proportion of plants utilized from each group remained relatively unchanged, being on average: 23 % antropophytes, 42 % apophytes, 32 % hemeradiaphores and 3% hemerophobes. Comparison of the usage cases of the most used plants revealed considerable changes in plant utilization, where the use of the most popular antropophytes increased and the use of hemeradiaphores decreased almost two fold in one century. Case studies on seven taxa are presented; of them, the use of *Allium sativum* L., *Aesculus hippocastanum* L. and *Mentha xpiperita* L. has increased, whereas the use of *Hordeum* L., *Orchidaceae* L., *Paris quadrifolia* L. and *Briza media* L. have decreased to practically zero. While some folklore reports still refer to the use of plants not preferring human influence, the majority prefer cultivated plants or those positively influenced by human activity. Nevertheless, throughout the reviewed time period, Estonians preferred to use for medical purposes the plants that depended on their activity and were thus available “on request”.

Article (V) **“How the name Arnica was borrowed into Estonian”** (written together with Ain Raal) takes as an example one imported species of herbs introduced into the Estonian herbal landscape before the 19th century: arnica. In the folklore collection of Jakob Hurt, arnica seems to be quite popular and is described there as a local plant. Indeed, according to the information of Gustav Vilbaste, the first Estonian ethnobotanist, there were altogether 19 local plants known by the phytonym. *Arnica montana* (the prototype of the arnica name) did not get acclimatized to the Estonian climate and thus became ‘own’ by extending its name to locally growing plants, a process that could be called cultural acclimatization. The article argues that the foreign name was probably given to folk medicinal plants that were already effectively used. Six of them (*Leontodon autumnalis*, *L. hispidus*, *Pilosella officinarum*, *Crepis tectorum*, *Solidago virgaurea*, and *Inula salicina*) have been insufficiently researched from the ethnopharmacological point of view.

Article (VI) “**Uninvited guests: traditional insect repellents in Estonia against Clothing Moths *Tineola bisselliella* (Hummel), Human Fleas *Pulex irritans* L. and Bedbugs *Cimex lectularius* L.**” (written together with Raivo Kalle and Ingvar Svanberg) discusses ways of reducing clothing moths *Tineola bisselliella* (Hummel) (*Lepidoptera, Tineidae*), human fleas *Pulex irritans* L. (*Siphonaptera, Pulicidae*) and bedbugs *Cimex lectularius* L. (*Hemiptera, Cimicidae*) with the help of plants used by Estonians during the last century. Various taxa used as traditional repellents have been identified; of them the most used were: Sweet flag *Acorus calamus* L., Wormwood *Artemisia absinthium* L., Marsh rosemary *Rhododendron tomentosum* Harmaja, syn. *Ledum palustre* L., Stinging nettle *Urtica dioica* L., Knotweed *Polygonum* L., Wood Ferns *Dryopteris* Adans., Tobacco *Nicotiana* ssp., Creeping willow *Salix repens* L., Meadow buttercup *Ranunculus acris* L., Mint *Mentha* ssp., White clover *Trifolium arvense* L., and Quaking-grass *Briza media* L. The use of those plants as repellents and their toxic principles were also discussed from a comparative perspective. Some of the plants used as repellents by Estonian country folk were already being utilized for the same purpose in ancient times. This knowledge spread, along with the plants, all over Europe. Some uses existed already in pre-historic times (*Artemisia absinthium*); some probably developed during Medieval times or later (*Acorus calamus*; *Nicotiana* ssp.). For the plants for which no comparative usage records exist, two different conclusions can be drawn. First, they were used only because of a name attributed according to some other characteristics of the plant (as *Polygonum* and *Ranunculus acris*), or only named but not really used (as *Briza media*). On the other hand, they could have been in use earlier and acquired the name from their actual use against fleas. Later on, the less effective, more-lightly scented local taxa were replaced when more effective taxa were introduced. The fact that plants from the *Polygonum* family were relatively often in use, and this usage is documented by Vilbaste (1993), supports the second conclusion. The case of *Trifolium arvense* is interesting because of its unusual use in repelling insects.

## 4. CONCLUSIONS

The wider objective of this work is to fill the gap in analysing historical herbal lore. Showing just some possibilities provided by the use of the ecosemiotic approach within ethnobotanical research, the author hopes that this dissertation will encourage future similar interdisciplinary research projects. As both disciplines deal with interaction between humans and nature, there are many points of contact and joint interpretation for the better development of both. The following are some of the most important conclusions reached with this dissertation:

1. The contribution of ecosemiotics to ethnobotany is to provide better methods and models for analysis in order to understand the cognitive and human ecological underpinnings of the uses of medicinal plants. The ecosemiotic approach describes semiosis that occurs between humans and their ecosystem (including the plant community) and, additionally to anthropological methods, provides a powerful tool for understanding the sign relations in the processes of medicinal plants selection, recognition and use.
2. The notion of herbal landscape applied in this dissertation is used to capture the phenomenon of ethnobotanic knowledge among (rural) Estonians, and as a model to explain the mechanism of changes in the use of medicinal plants over time.
3. Introduction of models of semiosis (e.g., Peirce's triadic relation) into the theoretical discussion of the recognition of plants and the orientation within the herbal landscape uncovers ethnobotanical aspects that have so far been considered only very slightly.
4. Mapping different approaches to the transfer of knowledge on plant use and its change over time through lived and learned tradition can form a basis for future investigation into the modernized plant knowledge among urbanized populations.
5. Use of ecosemiotic elements in the methods of analysis allowed us to include into the ethnobotanical analysis the historical folkloristic data that otherwise would have been left aside as collected without specific ethnobotanical methodological standards.

The database used in this work may provide many fruitful years of work for a whole group of scientists. For example, future research questions could be the changes in the cultural importance of plants, the dynamics of introduction of new species on a larger scale level, the evolution of the herbal landscape from the perspective of cultural assimilation of plants, the influences of neighbours within and outside Estonia, the role books and media play in the perception of the herbal landscape, to name only some.

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# SUMMARY IN ESTONIAN

## Ravimtaimemaastik

Ravimtaimemaastik on maastik, mis moodustub inimese suhetest raviotstarbel kasutatavate taimedega, sisaldades isikliku või kogukondliku teadmise ümbruskonnas kättesaadavatest ravimtaimedest. Ravimtaimemaastik on kognitiivne väli, mis tekib ravi või profülaktika vajaduste ilmnemisel ja moodustub kindlas looduses ja kultuuriruumis. Olles üheaegselt dünaamiline (muutuv ajas ja ruumis) teadmiste kogum, mis on samas staatiliselt seotud kindla paigaga (inimese elukoha ja/või sagedase külastuskohaga), on ravimtaimemaastiku elemendid märgina tajutavad vaid mitme asjaolu (taime kasutuse vajadus, taime tundmine, õige koha külastamine) täitumisel. Käesolevas töös on ravimtaimemaastik kui maastiku tajumise fenomen kasutusel mudelina, mille abil analüüsitakse ravimtaimede kasutamise mehhanisme ning nende muutusi ajas, süvendades nõnda taimravi kognitiivsete, inimökoloogiliste ja semiootiliste põhimõtete mõistmist.

Väitekirja üldine suunitus on praktiline, ajalooline, kvalitatiivne ja diakrooniline ning kasutatud on ökosemiootika (kesksete teoreetikutena Itaalia maastikuökoloog Almo Farina ja Briti sotsiaalanthropoloog Tim Ingold) ja etnobotaanika meetodeid (toetudes Nina Etkini, Elios Ann Berlini, Bent Berlini, Anna Waldsteini, Cameron Adamsi jt töödele). Väitekirja peamised teaduslikud eesmärgid on:

- (1) esitada ülevaade taimravipärimuse kogumisest ja säilitamisest Eestis ning eelnevast sellealasest teadustööst;
- (2) integreerida ökosemiootika meetodeid etnobotaanilisse uurimisse, soodustamaks pärimusainese interpreteerimist etnobotaanika seisukohalt;
- (3) arendada ravimtaimemaastiku kontseptsiooni ning selle teoreetilisi aluseid;
- (4) testida uusi lähenemisviise etnobotaaniliselt aktsepteeritud uurimistöö kaudu.

Väitekirja aluseks olevaks materjaliks on eesti taimravipärimus, mida on süstemaatilisemalt kogutud Jakob Hurda esimesest, 1888. aasta üleskutsest alates, kusjuures kogujaiks on olnud nii traditsiooni järgi elav maarahvas kui ka (hiljem) eestlastest kutselised arstid (nt. Mihkel Ostrov, Jaan Lääts), botaanikud (eeskätt Gustav Vilbaste) ja folkloristid (Rudolf Põldmäe, Richard Viidalepp, Herbert Tampere, Mall Hiimäe, Mare Kõiva jt). Üksikute taimeliikide, taimerühmade või ravitahkude lõikes on Eesti taimravipärimust juba varemgi analüüsitud (nt. Rudolf Walner, Ilmari Manninen, Gustav Vilbaste, Jaan Grünthal, Ella Koern, Mall Hiimäe, Ain Raal jt.). Enam kui saja aasta jooksul kogutud taimravipärimuse koondamine autori koostatud ühtsesse Historistlikusse Eesti Rahvameditsiini Botaanilisse Andmebaasi (HERBA) löi võimaluse vaadelda ja analüüsida kogu materjali tervikut ja keskenduda ravimtaimekasutuse ja selle tagamaade kui nähtuste analüüsile.

Väitekiri koosneb sissejuhatavast peatükist, mis esitab lühidalt ravimtaimemaastiku mõiste teoreetilised lähtekohad, kirjeldab taimravipärimuse iseärasusi ja etnobotaanika arengut Euroopas, ning kuuest artiklist.

Töösse koondatud artiklid on reastatud vastavalt ravimtaimemaastiku mõiste loogilisele arengule ning analüüsivad igaüks ühte kitsamat lõiku andmestikust või ühte nähtust. Artikkel I **“Data on medicinal plants in Estonian folk medicine: collection, formation and overview of previous research”** (Eesti taimravipärimus: kogumine, kogude kujunemine ja ülevaade eelnevast teadustööst, kirjutatud koos Ain Raaliga) annab ülevaate taimravipärimuse kogumisest ja olemasolevast materjalist Eestis. Artikkel II **“Herbal landscape: the perception of the landscape as a source of medicinal plants”** (Ravimtaimemaastik: maastiku tajumine ravimtaimede allikana, kirjutatud koos Raivo Kallega) on esimene katse sõnastada ravimtaimemaastiku mõistet ning seda piiritleda. Artikkel III **“Plant as object within herbal landscape: different kinds of perception”** (Taim kui objekt ravimtaimemaastikul: erinevad tajumise viisid, kirjutatud koos Raivo Kallega) kasutab ravimtaimemaastiku kontseptsiooni, mõistmaks taime tajumist ravimtaimemaastikul. Artikkel IV **“Change in medicinal plant use in Estonian ethnomedicine: a historical comparison between 1888 and 1994”** (Eesti ravimtaimekasutuse muutused: ajalooline võrdlus aastate 1888 ja 1994 vahel, kirjutatud koos Raivo Kallega) uurib ravimtaimemaastiku moodustava taimestiku struktuuri muutusi sõltuvalt taimede kultuurisuhetest. Artikkel V **“How the name Arnica was borrowed into Estonian”** (Kuidas taimenimi arnika eesti keelde laenati, kirjutatud koos Ain Raaliga) analüüsib olukorda kus potentsiaalselt kasulikud taimeliigid olid nimetatud võõramaise taime nimega. Artikkel VI **“Uninvited guests: traditional insect repellents in Estonia against Clothing Moths *Tineola bisselliella* (Hummel), Human Fleas *Pulex irritans* L. and Bedbugs *Cimex lectularius* L.”** (Kutsumata külalised: Eesti traditsioonilised taimed koide, kirpude ja lutikate peletamiseks, kirjutatud koos Raivo Kalle ja Ingvar Svanbergiga) on etnobotaaniline kvantitatiivne uurimus looduslike putukapeletite kasutamisest Eestis.

Väitekirja laiem eesmärk on astuda samm edasi ajaloolise taimepärimuse analüüsimisel. Näidates vaid mõningaid võimalusi, mida ökosemiootiline lähenemine etnobotaanikale pakub, loodab autor julgustada taolisi uurimusi tulevikus. Mõlemad distsipliinid keskenduvad inimese ja looduse koosseksisteerimise uurimisele, seega loob ökosemiootika põimimine etnobotaanikaga võimaluse luua uusi mudeleid ja meetodeid taimravipärimuse analüüsiks, kusjuures ravimtaimemaastiku mõiste on vaid üks võimalik selle integratsiooni väljundeid.

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My engagement with the Estonian Literary Museum and herbal lore actually started during my BSc studies, and since then Mare Kõiva has constantly been my adviser, reader, critic and patron. Guiding me sometimes through the analysis of my work and sometimes by simple remarks on my replies, she taught me to be critical regarding the sources, notice meanings hidden behind the words and also to be self-critical.

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## **PUBLICATIONS**

# CURRICULUM VITAE

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### Education

1989–1992 Tapa High School  
1992–1999 BSc in Pharmacy (Medicine). University of Tartu  
2000–2003 MSc in Environmental Sciences. University of Tartu  
2004–2010 Doctoral studies in semiotics and cultural studies. University of Tartu

### Employment

1996–2000 Consulter, Leks Insurance LTD  
2000–2004 Project Manager, Museum of Tartu University History  
2004–2005 ISFNR congress secretary, Estonian Literary Museum  
2006–2010 Researcher, project HERBA leader, Dept of Folkloristic, Estonian Literary Museum  
2009–2010 Research fellow, Science Center, Tartu University Library

### Academic work

Fields of research:

- Ethnobotany, ecosemiotics, environmental history, history of medicine, ethnopharmacology, cultural studies

Teaching experience:

- Medicine as culture – e-course, University of Tartu, Department of Semiotics, (spring 2008) with Mare Kõiva and Ken Kalling
- Cultural heritage – Estonian University of Life Science, Institute of Agricultural and Environmental Sciences (spring 2009), with Raivo Kalle

Received research grants:

- Research and Development program “Estonian Language and Cultural Memory” project “HERBA ja sateliit-andmebaasid [HERBA and satellite databases]”, EKKM09-84, 01.01.09 – 31.12.13. Principal investigator
- Research and Development program “Estonian Language and National Memory” project “HERBA” ECRM06-68- 01.01.06 – 31.12.08. Principal investigator
- Rahvapärimuse baasil uute ravimtaimede tuvastamise eeluuring [Preliminary study into identifying new medical herbs on the basis of folklore records], Enterprise Estonia project EU27440, 15.08.07 – 14.02.08. Chief performer

Received scholarships and awards:

- Open Science Network in Ethnobiology (OSN) scholarship for attending 2nd Annual meeting of the OSN and The 51st Annual Meeting of the Society for Economic Botany. June 5–10, 2010 Mexico, Xalapa
- DoRa scholarship for attending pre-congress student workshop and 12th International Congress of Ethnobiology. May 9–14, 2010, Canada, Tofino
- Presentation “How to read the text on herbal healing” at the conference “Young scientists in science history” (Estonian Academy of Young Scientists). 20. April 2006. Awarded main scholarship
- Yearly silver award by journal *Academia* for article “Medicinal plants in Estonian folk medicine: historical background, collection and analysis of ethnopharmacological data”, written with Ain Raal, 2004
- Personal awards by Cultural Endowment of Estonia for developing HERBA, years 2000, 2008, 2009

Academic organizations:

- 2009... Member of International Society of Ethnobiology
- 2007... Member of Society for Economic Botany
- 2005... Member of Estonian Semiotics Association
- 2004... Member of Estonian Naturalists' Society

International workshops organized:

- First five workshops of MEDICA series, including two international. <http://www.folklore.ee/ri/fo/konve/medica/>
- International Society of Ethnobiology Eastern-European regional workshop “Old treasures in the new Europe: the future of ethnobiology in the East and Far East”. Tallinn, 15–18. October 2010. <http://www.folklore.ee/~renata/workshop/default.htm>

## **Other activities**

### Public activities:

- 1998... Member of Estonian-Tibetan Cultural Society
- 2002... Establisher and member of the Board of Estonian Folklore Institute
- 2006... Establisher and president of Estonian Prader-Willi Syndrome Association

### Creative activities:

- Photography – one personal exhibition (2003)
- Painting – three personal exhibitions (2004)

### Taiji Quan:

- European IV Open Championship, St. Petersburg October 2004: II place in restricted steps push-hands and III place in moving steps push-hands; 5 years of teaching experience

# ELULOOKIRJELDUS

## Renata Sõukand

Sünniaeg ja koht: 04.04.1974, Tallinn  
Kodakondsus: Eesti  
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## Haridustee

1989–1992 Tapa I Keskkool  
1992–1999 BSc farmaatsias, Tartu Ülikool  
2000–2003 MSc keskkonnatehnoloogias, Tartu Ülikool  
2004–2010 PhD õpingud semiootikas ja kulturoloogias, Tartu Ülikool

## Teenistuskäik

1996–2000 Konsultant, Leks Kindlustus  
2000–2004 Projektijuht, Tartu Ülikooli Ajaloo Muuseum  
2004–2005 ISFN kongressi sekretär, Eesti Kirjandusmuuseum  
2006–2010 Teadur, projekt HERBA juht, Eesti Kirjandusmuuseumi folkloristika osakond  
2009–2010 Projekti täitja, Tartu Ülikooli Raamatukogu Teaduskeskus

## Akadeemiline tegevus

Uurimisvaldkonnad:

- Etnobotaanika, ökosemiootika, keskkonnaajalugu, meditsiiniajalugu, kultuuriuuringud, etnofarmakoloogia

Õpetamistegevus:

- Meditsiin kui kultuur – e-kursus, Tartu Ülikooli semiootika osakonnas (kevad 2008) koos Mare Kõiva ja Ken Kallingiga
- Pärandkultuur – Eesti Maaülikool, Põllumajandus- ja keskkonnainstituut (kevad 2009), koos Raivo Kallega

Saadud uurimisgrandid:

- Riiklik programm “Eesti keel ja kultuurimälu” projekt “HERBA ja sateliit-andmebaasid”, EKKM09-84, 01.01.09 – 31.12.13. Vastutav täitja
- Riiklik programm “Eesti keel ja rahvuslik mälu” projekt “HERBA” EKRM06-68- 01.01.06 – 31.12.08. Vastutav täitja.
- Ettevõtluse Arendamise Sihtasutuse projekt “Rahvapärимuse baasil uute ravimtaimede tuvastamise eeluuring” EU27440, 15.08.07 – 14.02.08. Vastutav täitja

Saadud stipendiumid ja auhinnad:

- Open Science Network in Ethnobiology (OSN) stipendium osavõtuks etnootaaniika konverentsist. 5–10 juuni, 2010 Mehhiko, Xalapa
- DoRa stipendium etnobioloogia konverentsist osavõtuks. 9–14 mai, 2010, Kanada, Tofino
- Eesti Noorteadlaste Akadeemia korraldatud konverentsil “Noorteadlased teadusloost” 20. aprill 2006 SEB Eesti Ühispaniga stipendiumikonkursil I taseme uurimistöö stipendium artikli eest “Kuidas lugeda taimraviteksti”
- Ajakirja *Akadeemia* hõbeauhind 2004, artikli “Ravimtaimed eesti rahvameditsiinis: Ajalooline taust, etnofarmakoloogiliste andmete kogumine ja analüüs” eest (kirjutatud koos Ain Raaliga)
- Eesti Kultuurkapitali isiklikud stipendiumid HERBA arendamiseks aastatel 2000, 2008, 2009

Osalus akadeemilistes ühendustes:

- 2009... International Society of Ethnobiology liige
- 2007... Society for Economic Botany liige
- 2005... Eesti Semiootika Seltsi liige
- 2004... Eesti Looduseuurijate Seltsi liige

Rahvusvaheliste seminaride korraldamine:

- Esimesed viis MEDICA sarja seminari, sh kaks rahvusvahelist.  
<http://www.folklore.ee/rl/fo/konve/medica/>
- International Society of Ethnobiology Ida-Euroopa regionaalne seminar “Old treasures in the new Europe: the future of ethnobiology in the East and Far East”. Tallinn, 15–18. okt 2010.  
<http://www.folklore.ee/~renata/workshop/default.htm>

## Muu tegevus

Ühiskondlik tegevus:

- 1998... Eesti-Tiibeti Kultuuriseltsi liige
- 2002... Eesti Folkloori Instituudi asjatähta- ja juhatuse liige
- 2006... Eesti Prader-Willi Sündroomi Ühingu asutaja ja esinaine

Loominguline tegevus:

- Loodusfotograafia – üks isikunäitus (2003)
- Maal – kolm isikunäitust (2004)

Taiji Quan:

- European IV Open Championship, St. Petersburg: II koht piiratud liikuvusega tõukavates kätes, III koht liikuvates tõukavates kätes, oktoober 2004; 5 aastat õpetamiskogemust

## Publikatsioonid

- Kalle, Raivo; Sõukand, Renata 2010. Sissevaade eestlaste ravimtaimede tundmise mitmekesisusse. [An insight in the diversity of Estonians' knowledge regarding medicinal plants] *Mäetagused. Elektrooniline ajakiri*, 45, 77–94.
- Sõukand, Renata; Kalle, Raivo 2009. Historistlik Eesti Rahvameditsiini Botaaniline Andmebaas (HERBA): struktuur ja klassifitseerimine. [HERBA, the Estonian folk medicine database of plant use: structure and classification] Ed. Annuk, Eve. *Paar sammukest. Eesti Kirjandusmuuseumi aastaraamat [Yearbook of Estonian Literary Museum]* 2008. Eesti Kirjandusmuuseum. 237–253.
- Sõukand, Renata, and Raivo Kalle. 2008. *Historistlik Eesti Rahvameditsiini Botaaniline Andmebaas (HERBA)*. [HERBA, the Estonian folk medicine database of plant use.] <http://herba.folklore.ee>.
- Sõukand, Renata 2007. Kuidas võõras muutub omaks: kaks taime eesti rahvameditsiinis. [How foreign becomes own: two plants in Estonian folk medicine] *Mäetagused. Elektrooniline ajakiri*, 36, 79–104.
- Sõukand, Renata 2007. Mis teeb taimest ravimtaime? [What makes the medicinal plant] *Acta semiotica Estica*, 160–174.
- Sõukand, Renata 2007. 19. sajandi eesti taimravi Roman Jakobsoni kommunikatsioonimudeli valguses [Estonian herbal healing of 19<sup>th</sup> century in the light of Roman Jakobson's model of communication]. *Kommunikatsiooniteooria [Theory of communication]. Schola Biotheoretica* 33. 82–90.
- Sõukand, Renata 2006. Kassi keelel seitse ohtu, koera keelel seitse rohtu [Cat's tongue has seven poisons, dog's tongue has seven cures]. *Mäetagused. Elektrooniline ajakiri*, 31, 87–105.
- Sõukand, Renata 2006. Kuidas lugeda taimeraviteksti. [How to read the text on herbal healing] *Noorteadlased teadusloost*. Ed. Teperik, D. Tallinn: OÜ K-Tolliblanketid, 89–96.
- Sõukand, Renata 2005. Классификация этиологий болезней эстонской народной медицины. [Classification of disease etiology in Estonian folk medicine] *Concept of a human in traditional society*. Vilnius, 188–195.
- Raal, Ain, Sõukand, Renata 2005. Classification of remedies and medical plants of Estonian ethnopharmacology. *Trames* 9 (3), 259–267.

- Sõukand, Renata 2005. Loodus eesti rahvameditsiinis [Nature in Estonian folk medicine]. *Eesti looduskultuur [Estonian natural culture]*. Tartu: Eesti Kirjandusmuuseum, 55–79.
- Sõukand, Renata 2005. Platseebo – kelle jaoks vale? [Placebo – a lie, but for whom?]. *Valeteooria [Theory of lie]*. *Schola Biotheoretica* XXXI, 56–61.
- Sõukand, Renata 2004. “Jooksvaruhud” Eesti rahvameditsiinis. [Rheumatism herbs in Estonian folk medicine] *Akadeemia*, 11 (2004), 2475–2493.
- Sõukand, Renata; Raal, Ain 2004. Ravimtaimed eesti rahvameditsiinis: Ajalooline taust, etnofarmakoloogiliste andmete kogumine ja analüüs. [Medicinal plants in Estonian folkmedicine: historical background, collection and analysis of ethnopharmacological data.] *Akadeemia* 8 (2004), 1734–1762.
- Sõukand, Renata. 2003. Pilguheit haiguspõhjuste süstemaatikale. [Glance on the systematizations of diseases etiologies] *Mäetagused. Elektrooniline ajakiri*, 22, 107–115.

## DISSERTATIONES SEMIOTICAE UNIVERSITATIS TARTUENSIS

1. **М. Ю. Лотман.** Структура и типология русского стиха. Тарту, 2000.
2. **Елена Григорьева.** Эмблема: структура и прагматика. Тарту, 2000.
3. **Valdur Mikita.** Kreatiivsuskäsitluste võrdlus semiootikas ja psühholoogias. Tartu, 2000.
4. **Ирина Аврамец.** Поэтика новеллы Достоевского. Тарту, 2001.
5. **Ян Левченко.** История и фикция в текстах В. Шкловского и Б. Эйхенбаума в 1920-е гг. Тарту, 2003.
6. **Anti Randviir.** Mapping the world: towards a sociosemiotic approach to culture. Tartu, 2004.
7. **Timo Maran.** Mimikri kui kommunikatsiooni-semiootiline fenomen. Tartu, 2005.
8. **Элеонора Рудаковская-Борисова.** Семиотика пищи в произведениях Андрея Платонова. Tartu, 2005.
9. **Andres Luure.** Duality and sextets: a new structure of categories. Tartu, 2006.
10. **Peeter Linnap.** Fotoloogia. Tartu, 2006.
11. **Daniele Monticelli.** Wholeness and its remainders: theoretical procedures of totalization and detotalization in semiotics, philosophy and politics. Tartu, 2008.
12. **Andreas Ventsel.** Towards semiotic theory of hegemony. Tartu, 2009.
13. **Elin Sütiste.** Tõlke mõiste dünaamikast tõlketeaduses ja eesti tõlkeloos. Tartu, 2009.