



UNIVERSITY OF HELSINKI



<https://helda.helsinki.fi>

Helda

Storytelling beyond body text in popular science books : a multimodal analysis

Virtanen, Mikko T.

De Gruyter Mouton

2022-05-05

Virtanen, M T 2022, 'Storytelling beyond body text in popular science books : a multimodal analysis', *Multimodal Communication*, vol. 11, no. 2, pp. 93-109. <https://doi.org/10.1515/mc-2021-0015>

<http://hdl.handle.net/10138/357591>

10.1515/mc-2021-0015

unspecified

publishedVersion

Downloaded from Helda, University of Helsinki institutional repository.

This is an electronic reprint of the original article.

This reprint may differ from the original in pagination and typographic detail.

Please cite the original version.

Research Article

Mikko T. Virtanen*

Storytelling beyond body text in popular science books: a multimodal analysis

<https://doi.org/10.1515/mc-2021-0015>

Received August 13, 2021; accepted April 7, 2022; published online May 5, 2022

Abstract: This article examines multimodal storytelling performed outside the main body text in book-length popular science. By employing a case study approach, the study examines three kinds of visually detached stories: i) fragmentary case stories of lay experience, ii) fictional stories of prehistorical lifeworld and iii) scientists' personal stories with everyday photography. The article shows that detached stories are digressions from the locally, or also globally, dominant ways of making meaning. These digressions can be modality shifts (from verbal to multimodal) but also more complex shifts that engage with cultural boundaries of (popular) science. Furthermore, the article complements prior studies of photographic storytelling by discussing the affordances of everyday photography in public occasions. The analytic framework combines Systemic-Functional genre studies, Social Semiotic and related models of visual design as well as approaches to factuality and fictionality in Narrative Studies. The data consists of contemporary Finnish popular science books representing the natural sciences.

Keywords: everyday photography; layout; multimodality; popular science; storytelling

1 Introduction

While many, if not most, fields of science semiotise the world by generalising about things and processes, contemporary popular science commonly does also the opposite: it particularises the world and gives a human angle to it. As stories communicate personal, lived experiences of specific events and, moreover, invite the recipient(s) to share an emotional reaction, they are key resources in popularising various aspects of science and its effects in society and everyday life (e.g. Dahlstrom 2014). Fictionality further increases the affordances of storytelling in popularisations dealing with, for example, prehistorical phenomena or animal consciousness. On a more general note, the pervasive use of stories in current popular science reflects the global storytelling boom in journalism, non-fiction writing and elsewhere (e.g. Björninen 2019; Hiidenmaa 2020).¹

In popular science books and other page-based popularisations, stories can be presented in the layout in two fundamentally different ways. First, they can be embedded in a larger unit – typically the main body text. Embedded verbal stories can be used for instance as introductory leads or case examples (Virtanen 2020; see also Martin and Rose 2008, 218–226). Alternatively, stories can be presented in their own layout unit and, thus, detached from other elements in the page. Particularly in ‘text-flow’ layouts that are centred around the main body text (Bateman 2011), visually detached stories appear as secondary layout units – as digressions from the locally, or also more globally, primary or dominant ways of making meaning. In science popularisation, this difference can be related to, for example, semiotic modes (e.g. verbal vs. multimodal), rhetorical modes (e.g. storytelling vs. exposition), epistemic status (factual vs. fictional) and/or domains of knowledge (e.g. scientific vs. experiential). Thus, embedment and its counterpart, detachment, form a dimension of story design that

¹ I would like to thank the two anonymous referees for their apt comments and suggestions.

*Corresponding author: Mikko T. Virtanen, University of Helsinki, Helsinki, Finland, E-mail: mikko.virtanen@helsinki.fi

characterises one type of variation in stories encountered in popular science books and articles and, more generally, multimodal page-based communication.

Previously, a related conceptual pairing of ‘embedment’ and ‘detachment’ has been introduced in studies of conversational storytelling. According to Ochs and Capps (2001, 36–40), typical detached stories in conversation are unrelated to the topic and activity of the ongoing conversation and geared more toward performative telling of a story considered significant, ‘tellable’, in its own right. Embedded stories, on the other hand, are initiated in the course of conversation for example to illustrate a point or give a legal testimony. Thus, they are in the service of a larger activity. (Ibid.). These characterisations offer a point of comparison, but the dimension of detachment needs to be reworked for the analysis of stories functioning in visual media.

In this article, I am concerned with multimodal storytelling practices in book-length popular science – particularly related to stories told outside the main body text, henceforth referred to as ‘detached stories’. The analysis focuses on two sub-types: i) detached stories containing only verbal material and ii) those involving also photographic material (i.e. image-caption complexes).² By offering four case studies, the study aims to give an exploratory account of detachment as a feature of story design in page-based environments and, more specifically, to discuss how detached stories contribute to science popularisation vis-à-vis the surrounding main text. With regard to verbal stories occurring in detached position, the analyses shed light on ‘boundary work’ (Gieryn 1999) between the voices of science and lay experience as well as the employment of fictional storytelling to factual ends. Moreover, while image-caption relations have been widely discussed in multimodality studies (see e.g. Bateman 2014; Martinec and Salway 2005), this article focuses on a little-investigated phenomenon: the use and affordances of everyday, nonprofessional snapshot photography (see Chalfen 1987; Zuromskis 2009) in personal storytelling. It is suggested that everyday photography is particularly well suited to accompany personal storytelling and, more generally, interpersonal ‘sharing’ of personal experiences through the affective function of these photographs (see Zuromskis 2009; on sharing, see Tomasello 2008, Chapter 3; Matthiessen and Teruya 2015, 208).

The examples are drawn from detached stories encountered in four Finnish popular science books published in the mid-2010s. Following Turney and Bell (2014, 15), I define popular science as a general label for science communication “which assumes interest, but no particular expertise, on the part of the reader”.³ In the data, the intended reader is construed as a non-expert by various means: from profiling the targeted readership in paratexts such as forewords and back cover texts to displaying orientation to knowledge asymmetries in the main text (see Sections 3–5). The authors, in turn, are research scholars or non-fiction writers with an academic background. The books cover a number of fields in the natural sciences (biology, ecology, palaeontology and medicine).⁴ A case study approach was chosen to gain an in-depth understanding of the affordances (potentials) of detached storytelling in light of specific contexts of popularisation. It goes without saying that popular science books constitute a rather heterogeneous category in which knowledge from different areas of science is popularised with varying rhetorical strategies and with different kinds of target audiences in mind (see e.g. Turney and Bell 2014). This means that also the ways in which different forms of storytelling are deployed in the books can vary enormously from title to title. Therefore, this study – albeit of consisting of multiple cases – does not aim at exhaustive description.

² An additional sub-type that space did not permit to examine in this article is comic stories.

³ In addition to book-form popularisations, the category of popular science covers, for example, parts of science journalism, science blogging, television documentaries, radio call-in shows and museum exhibitions (Turney and Bell 2014).

⁴ Case selection was based on purposeful sampling and focused on ‘information-rich cases’ that manifest the phenomenon of interest intensely, in a pronounced way (Patton 1990, 169–171). However, instances considered very unusual and thus unrepresentative were excluded. The recognition of “rich cases” was informed by my own and colleagues’ prior work on scholarly popular science books within a two-year research project called *Tiedonkerronta* ‘Narrative popularisation’ (for an overview, see Hiidenmaa et al. 2018). Data for the project was collected with the help of the *Fennica* database, a data repository of Finnish publication output, provided by the National Library of Finland. After having handpicked around 30 books for further analyses, we became empirically confident that a saturation point had been reached. Although we did not specifically focus on awarded titles or authors, it soon became evident that emphasis on storytelling – detached and other kind – was a prominent feature of well-received books. This shows through also in the cases discussed in the current study. The project data covers the natural sciences as well as the humanities and social sciences, and spans over the years 2014–2016.

The framework of this study combines Systemic-Functional (SF) studies of story genres (e.g. Martin and Rose 2008; Virtanen 2020) with Social Semiotic and related approaches to visual multimodality and page layout (e.g. Bateman 2016; Nørgaard 2018; van Leeuwen 2005) as well as rhetorical approaches to factuality and fictionality within narrative studies (e.g. Björninen 2019; Nielsen et al. 2015). Methodologically, the study is based on multimodal discourse analysis (MMDA; see e.g. Kress 2013), in which all modes of meaning-making “are seen as equal, potentially, in their capacity to contribute meaning to a complex semiotic entity, a text, and each is treated as distinct in its material potential and social shaping” (ibid. 38). This means that the analytic focus is on the ways in which different modes are combined – either by convention or invention – to make and negotiate meaning in a given communicational and sociocultural framing. Although all modes available in a given communicative environment are seen as one connected resource for meaning-making, it is considered crucial in MMDA that each mode is *also* approached in terms specific to its discursive affordances and logic of organisation (e.g. linear organization in language vs. logic of simultaneity in images).

I begin by introducing the key concepts of the study and then analyse two detached stories realised mainly in the verbal mode. In the following section, I illustrate how verbal and visual resources are combined in detached stories by analysing two everyday photographs that are given a story frame in their captions. Finally, I draw out the conclusions and discuss potential future directions of enquiry.

2 Investigating popular science stories multimodally

2.1 Stories and story genres

Loosely defined, stories are representations of sequences of events, real or imagined. However, unlike other modes of time-structured representation such as chronicling and reporting, storytelling focuses on the personal “what-it’s-like” dimension of events, as Herman (2009, 143) has put it. Similarly, Martin and Rose (2008, 99) consider it prototypical for stories that the events are evaluated “in terms which enact bonds of solidarity among participating interlocutors”. Thus, the key social functions of stories are maintaining and shaping social relationships, “particularly at the level of local communities and kin” (ibid.). Performed in a public venue such as a popular science book, storytelling participates in blurring the distinction between the public and private spheres of life, as personal experiences and values are shared not with intimates but with the general public (see Fairclough 2003, 224; Matthiessen and Teruya 2015, 225–226). The established use of personal stories in contemporary public discourse highlights the complex dynamics between institutional and experiential authorities. While modernity surely elevated the authority of the expert, late modernity has, as Gabriel (2004, 176–177) aptly puts it, “not merely rediscovered an appetite for stories, but has rediscovered authority in personal experience”.

On a finer level of analysis, one can moreover distinguish between subcategories of stories by making generalisations about the variation observed among individual stories. In SF studies, these subcategories are called ‘story genres’. Genres, in turn, are characterised as “relatively stable, predictable, recurrent patterns of meaning through which the members of a given culture interact with one another” (Zappavigna and Martin 2018, 60). More specifically, genres are seen as “**social** because we participate in genres with other people; **goal-oriented** because we use genres to get things done; **staged** because it usually takes us a few steps to reach our goals” (Martin and Rose 2007, 6; emphasis MV). According to this view, story genres differ from each other in their social purpose (“point”) and in their staging structure through which the telling unfolds (e.g., Martin and Rose 2008, Chapter 2).⁵ For example, the classic Labovian story genre with COMPLICATION–RESOLUTION structure (Labov 1972) – referred to in SF simply as ‘narrative’ – is distinguished from ‘anecdote’ and

⁵ The generic staging should not, however, be taken as a rigid formula but an abstract structure that may be oriented to in many ways and exploited for various ends according to the particularities of a given situation. As Eggins and Slade (1996, 238) emphasise, and as I will show, “speakers frequently deviate from this ideal type but such deviations will be interpreted in relation to an understood generic convention”.

‘exemplum’ on the basis that the latter do not offer a resolution to the complication. Thus, while the prototypical Labovian story construes a “heroic” protagonist that succeeds in resolving a complication in one’s life, anecdote and exemplum serve quite different social purposes: they aim at sharing an emotional reaction to an unexpected course of events (= anecdote) or a moral judgment of unusual human behaviour, either admirable or damnable (= exemplum). (Martin and Rose 2008, 51–52.)

A characteristic of elemental story genres, such as those exemplified above, is that they rarely stand alone in communication, but fulfil second-order functions derived from an overarching genre, such as couples counselling (Muntigl 2004) or ethnographic research article (Hood 2016). In SF studies, these more complex genres are referred to as ‘macro-genres’ (cf. Bakhtin 1986 [1953]; Martin and Rose 2008, 218–225; Zappavigna and Martin 2018: 71–73). In popular science books, elemental story genres are commonly embedded in the body text to implement second-order activities such as topic introduction, exemplification and, more generally, science personalisation (Virtanen 2020). The contribution of the current study is to explore and illustrate the ways in which story genres are employed outside the body text in popular science books to fulfil the goals of the macro-genre.

Finally, with regard to genre and multimodality, it has been critically pointed out that staging structure can be a problematic basis for the analysis of visual genres since the visual modes (e.g. images, layout) are not necessarily employed in a way that follows the linear logic of the verbal modes (Hiippala 2014, 112–113; Zappavigna and Zhao 2017, 240). Moreover, SF-based research on story genres has so far relied on mainly spoken or written data (see Martin and Rose 2008, 51). Although it seems evident that many story genres allow multimodal realisations across a range of different media, the issue has not been, to the best of my knowledge, examined empirically. In Section 5, I address this gap by presenting two case studies of how an elemental story genre can be realised through a multimodal image-caption complex. Additionally, I introduce ‘detached case story’ as a *bona fide* multimodal genre with distinct characteristics related to medium, layout and typography (see Section 3).

2.2 Factuality and fictionality

In addition to their genre, stories can be differentiated with regard to the notions of factuality and fictionality. The global generic frame of the whole text (e.g. popular science book vs. novel) typically suggests either property – factuality or fictionality – as primary in relation to the text’s social purposes. Texts operating in the global frame of factuality can deploy manifold discursive practices to establish factuality at the textual surface level. As Björninen (2019, 359) has suggested, this can be done by appealing to “something that has the authority to inform opinion”. For example, case stories in feature journalism and popular science books can be used as appeals to ‘experiential authority’ of those who have personal, lived experience on the topic. Simultaneously, these stories suggest that personal experience has value as a form of knowledge (ibid., 361; see also Gabriel 2004). Moreover, as will be demonstrated in Section 3, by giving informant details (e.g. “Maria, 46”) and using direct reported speech, case stories can present themselves also as accurate, that is, ‘referentially authoritative’ (Björninen 2019, 360). Everyday photography can service the same indexical function in multimodal tellings (see Section 5). To take another example, in popular science books by academic scholars, authors can establish factuality by utilising both their professional, ‘institutional authority’ (Björninen ibid.) and their lived experiential authority (see Section 4).

In narrative studies, a further distinction is established between the genres of fiction and ‘fictionality’ as a rhetorical mode that can be employed also within a non-fictional whole (Nielsen et al. 2015). This local fictionality – communication of imagined and invented states of affairs without deceptive intent – in the service of global non-fiction has a paradoxical double quality, as it “is not meant to be understood as true and yet is meant to shape our beliefs about the actual world” (ibid., 67). For example, fictional stories can be used within a palaeontology book to offer an empathetic look at the presumed everyday life of Neanderthals and to overcome condescending attitudes towards early man (Section 4). Thus, as Nielsen et al. (ibid., 63) conclude, fictive and nonfictive discourse “represent two options for engaging with the actual world”. This makes their

interplay potentially fruitful also in science popularisation, although it typically involves careful ‘boundary work’ (Gieryn 1999) that demarcates the factuality of science from the fiction. Visual detachment of fictional stories is one manifestation of this differentiation.

2.3 Semiotic modes and media

Stories are realised within the confines of a given medium that affords the use of a particular set of semiotic modes and their resources in the telling. Following Bateman (2016, 56), ‘medium’ is defined here as “a historically stabilised site for the deployment and distribution of some selection of semiotic modes for the achievement of varied communicative purposes”. Semiotic modes, in turn, are understood as interpretative practices that are constructed and maintained by communities of users (ibid., 39). As a medium, the printed book – focus of this article – allows the use of a range of static visual-verbal semiotic modes in its “canvas”: the written verbal mode, the assisting typographic mode as well as various visual modes (e.g. photographic, diagrammatic) and layout modes (e.g. ‘text-flow’, ‘page-flow’).⁶ However, while the medium determines which modes are physically and materially available for its users (e.g. it is impossible to use spoken language in a printed book), genre determines which modes are socio-culturally sanctioned. For instance, a research monograph using comics as its main semiotic mode might not be accepted, whereas popular science books have also been published in comic form. Other factors, such as printing costs, can locally affect the availability of semiotic modes (e.g. colour).

Finally, the layout phenomenon investigated here – visual detachment of stories in text-flow layout – can be conceptualised more generally as an instance of ‘framing’. In Social Semiotics, framing is an umbrella term referring to connection and disconnection of elements in a visual or other composition (Kress and van Leeuwen 2006 [1996], 203–204; van Leeuwen 2005, 6–14). In layout structure, as Nørgaard (2018, 127) clarifies, “[f]rames connect elements [...] by signalling that what is placed within a given frame belongs together. At the same time, the elements within the frame are marked off by the frame from that which is outside the frame.” Frames can be constructed using for example lines, empty space or a distinct background colour. With regard to disconnection, a further distinction can be made between total ‘segregation’ and weaker or fuzzier ‘separation’. In segregation, an explicit frame demarcates two or more elements and suggests that they “belong to different orders” (van Leeuwen 2005, 13) – for example, to the world of facts versus fiction (see Section 4). In separation, by contrast, elements are disconnected by empty space or other “buffer zone”, which creates a sense that the elements “should be seen as similar in some respects and different in others” (ibid.). Prime examples are image-caption pairs where empty space separates the image from the caption. However, a larger amount of empty space is typically used when separating the image-caption complex from the main body text, creating a stronger sense of disconnection between these elements (see Nørgaard 2018, 127). In this article, the notion of ‘detachment’ is used to cover both segregation and separation.

3 Detached verbal stories: fragmentary recontextualisations of patient stories

I begin the analysis with a detached story that is realised primarily in the verbal mode. The story comes from a medical book called *Eturauhasen sairaudet: ennaltaehkäisy, tutkimukset, hoito* (‘Prostate disorders: prevention, examination, treatment’; Boström 2015). According to the foreword, the aim is to provide men and their family with a guide to understanding prostate functions and diseases as well as the procedures of prostate

⁶ Page-flow refers to a composite semiotic mode that abandons the principle of linearity characteristic of text-flow. Instead, page-flow turns towards “proximity, grouping of elements, framing and other visual perceptual resources in order to construct patterns of connections, similarity and difference” (Bateman 2011, 26). Newspapers, magazines and school textbooks commonly deploy page-flow to structure their page layout.

cancer treatment. In the back cover, the author is introduced as an academic expert ('PhD, docent in urology'; 'head of Urology Department').⁷ As a visual reinforcement, a photograph of the author in white coat is provided. Thus, and as is expected in popular science books, these two paratexts construe an asymmetric role-relationship between the author and intended readers: the author is positioned as an institutional authority, whereas the readership is profiled in a domestic frame ('men and their family').

The book was granted the Finnish State Award for Public Information. In the prize announcement, it is praised for the patient stories included, which "bring the book closer to the reader and make it humane" (TCPI 2017). According to the foreword, the stories are based on interviews conducted by the author. In this section, one of the stories is analysed.

A total of 20 patient stories are spread throughout the book. The pieces are relatively short and placed in their own layout unit on one side of the main text. Their visual detachment reflects the overall decision made in the book to keep the two types of authority – the institutional and the experiential – separated and to give the former primacy. In Gieryn's (1999) terms, this can be understood as 'boundary work' that, while giving voice to lay experience, maintains the factual authority of science (see also Mellor 2003; Oikkonen 2013). In fact, the main text does not take interest in the patients' stories in any way. This suggests a rather traditional dualistic medical model where the body is separated from the mind and the social and emotional dimensions of illness are backgrounded (see Stewart 2015).⁸ The dualistic model contrasts with the more holistic approaches put forward in medical humanities. For example in narrative medicine, weight is added to the physician's skills "to listen to narratives of illness, to understand what they mean, to attain rich and accurate interpretations of these stories, and to grasp the plights of patients in all their complexity" (Charon 2006, 3).

Figure 1 illustrates the visual conventions of story detachment in the prostate book. In the figure, the patient story is located at the bottom left corner of the page. It is placed in its own layout unit explicitly segregated from the main text by a distinct background colour. Furthermore, the verbal story is framed with a salient, stylised quotation mark – a convention used widely also in case stories in health and lifestyle journalism etc. A similar claim can be made about the informant details at the end (*Janne 50 v.* 'Janne, aged 50'). Together, these verbal and typographic choices can be taken as displays of referential and (vicarious) experiential authority: they index a personal and "unfiltered" viewpoint. Naturally, it should be borne in mind that these stories are results of a recontextualisation process whereby an (elicited) oral story is transformed into written form and presented in short snippets to create new meaning in a new communicative context (see Linell 1998). It is also possible that the stories were curated by omitting critical voices or very distressing experiences.

The main text surrounding the patient story deals with biopsy: it describes the procedure and – as the subheading contained in Figure 1 suggests – instructs the reader in preparing for and recovering from it (*Ennen ja jälkeen koepalojen oton* 'Before and after biopsy'). The body text acknowledges the experiences of patients on a general level by giving estimations of how painful the examination is likely to be, as the following verbal excerpts from Figure 1 illustrate:

- *Ajoittain yksittäiset näytteet voivat aiheuttaa lievää kipua.*
'sometimes the taking of samples may cause slight pain'
- *Koepalojen oton jälkeen saattaa eturauhasen alueella tuntua hieman jomotusta, muttei varsinaista kipua.*
'after the biopsy, you might feel a mild pulsating ache in the prostate area, but not actual pain'

Let us now turn to the patient story in Figure 1. Although its topical focus, biopsy, aligns with the main text, the crucial difference is that whereas the main text sheds light on the abstracted physiological dimension of the procedure, the story focuses on the personal, emotional dimension. An English translation of the story is given in Extract 1.

⁷ The English translations are by the author unless otherwise noted.

⁸ However, following Gabriel's (2004, 182) line of thought, an alternative interpretation would be that the author "honours" the patients by respecting their stories and gives up "any right to 'use' the narrative to control the patients or their condition".

asiaa on runsaasti tutkittu ja nykyään suosituksena on ottaa ensimmäisellä kerralla yhteensä 10–12 koepalaa. Tällä määrällä saadaan riittävä varmuus siitä, että eturauhasessa mahdollisesti olevan syöpäkasvain tulee diagnosoitua ja toisaalta komplikaatioiden määrä pysyy vähäisenä.

Neulanäytettä otettaessa potilasta pyydetään asetumaan kylkiasentoon. Koko toimenpide kestää yhteensä 15–20 minuuttia. Koepalalaitetta laukaistaessa kuuluu varsin voimakas ääni, johon kannattaa jo etukäteen varautua, muuten sitä saattaa pelästyä. Puudutuksen jälkeen neulanäytteiden otto on yleensä täysin kivutonta, mutta tapahtuman kyllä tuntee. Ajoittain yksittäiset näytteet voivat aiheuttaa lievää kipua. Erityisesti eturauhasen kärjen seutu saattaa puuttua hieman muuta eturauhasta huomnommin, mistä johtuen kun näytepalaa otetaan kärjen seudulta, saattaa sen tuntea selkeämmin.

” PSA-testin tulosten jälkeen olin ehkä niin ”shokissa”, että en vielä ymmärtänyt, mikä on PSA-arvo ja mikä minun arvoni oli. Voin kertoa, että jännitti mennä urologille. En tiedä, jännittikö tutkimus, vai se, että joku sorkkii alapäästäni. Tämä voi olla syy, miksi en ennen ollut käynyt urologilla.

Urologilla tutkimuksessa ensimmäiset sanat menivät suurin piirtein näin ”ohoh onpas se aikamoinen” ja ”tällä kokemuksella voin sanoa, että sinulla on eturauhassyöpä”. Tässä vaiheessa kerroin vaimolle kyneleet silmissä, että minulla on luultavasti eturauhassyöpä. Sairaalassa urologi kertoi selvästi, mikä on PSA-arvo ja mikä oli minun arvoni (190) ja mikä on normaali arvo. Urologi kertoi myös, että heillä ja syöpälääkäreillä on kokous, jossa päätetään jatkohoidosta. Koska olen vielä työikäinen, menin suoraan tutkimusjonojen kärkeen.

Janne 50 v.

Ennen ja jälkeen koepalojen otton

Koepalojen ottoon ei vaadita mitään erityisiä valmistautumisia. Toimenpidettä ennen ei esimerkiksi ole välttämätöntä käydä vessassa tyhjentämässä suolta. Sen sijaan koepalojen otton yhteydessä on tärkeä huolehtia, ettei eturauhanen tulehdu. Tästä syystä potilaalle määrätään antibiootteja ennen toimenpidettä joko poliklinikalla tai sitten antibiootit on määrätty otettavaksi kotona. Antibioottia saatetaan määrätä vielä 1–2 tablettia myös kotiin otettavaksi, mutta pitempää varsinaista antibioottikuuria ei tarvita.

Ennen toimenpidettä ottoa on myös kerrottava mahdolliset omat lääkkeet urologille. Vaikka koepalojen otto on mahdollista verta ohentavien lääkkeiden (esim. pieniannoksinen aspiriini ja varfariini, kauppanimeltään Marevan[®]) käytön aikana, tulee tapauskohtaisesti harkita mahdollinen lääke- ja verisuonitauko. Tulehduserkkyyttä lisäävät lääkkeet, esimerkiksi suuriannoksinen kortisoni tai hylkimisnestolääkkeet elinsiirtopotilailla, tulee myös ottaa huomioon. Samoin on syytä ilmoittaa mahdolliset antibioottiyliherkkyydet ja allergiat, jotta lääkäri voi valita sopivan antibioottisuojaan.

Koepalojen otton jälkeen saattaa eturauhasen alueella tuntua hieman jomotusta, muttei varsinaista kipua. Tätä voi tarvittaessa hoitaa tavallisilla särkylääkkeillä. On myös tavallista, että peräsuolesta saattaa tulla verta ja myös virtsa voi olla veristä. Nämä kestävät yleensä muutaman päivän. Virtsan verisyyden loppumista voi nopeuttaa juomalla hieman normaalia enemmän, jotta veri huuhtoutuu tehokkaammin pois. Siemenneste on tyypillisesti veristä alkuun ja ruskehtavanoranssia jopa useita viikkoja. Nämä seikat voidaan katsoa koepalojen ottoon normaalisti kuuluviksi ja yhteydenotto hoitavaan sairaalaan on tarpeellista ainoastaan, jos verenvuoto on rajua.

Muita suhteellisen lieviä mahdollisia komplikaatioita ovat virtsankulun vaikeudet. Nämä johtuvat siitä, että eturauhanen ärtyy ja turpoaa koepalojen otton vuoksi. Varsinkin jos potilaalla on jo aiemmin ollut oireita virtsankulun kanssa, voi tilanne

Figure 1: Visually detached patient story from a medical book (Boström 2015, 74). Reprinted by permission of Tammi Publishing.

Extract 1. After hearing about the PSA test results, I was probably so in “shock” that I hadn’t understood what a PSA level was and what mine was. I admit, I was nervous about going to the urologist. I can’t tell whether I was nervous of the examination or of somebody messing around with my crotch. This might be the reason why I hadn’t made an appointment earlier.

In the examination, the urologist's first words were roughly "oh my, that's quite something" and "in my experience, I would say you have prostate cancer". At this point I told my wife, with tears in my eyes, that I most likely had prostate cancer. At the hospital, the urologist explained to me what the PSA test is about, what my PSA level was (190) and what the normal level is. The urologist also told me that the cancer doctors would have a meeting in which the follow-up treatment would be decided. Because I was still of working age, I went straight to the front of the queue. – Janne, aged 50

As can be observed from Extract 1, the reported patient story deals with the what-it's-like dimension of receiving the bad news from the doctor. The story begins by referring to a previous event in the chain ('After hearing about the PSA test results'), which offers the story as a fragment – snippet from a larger whole. The first paragraph consists of a reflective telling about the fear of going to the prostate examination. The reflection is construed through repeated epistemic evaluations, which display that the patient is trying to get a grip on the experiences and aspirations of his past self (e.g. 'After hearing about the PSA test I was **probably** so in "shock" that [...]'; 'I **can't tell** whether I was nervous of the examination or [...]').

The second paragraph begins with the moment of receiving the bad news from the doctor – a complicating event in Labovian story structure. The use of direct reported speech (signalled by the quotation marks) indicates the significance of the doctor's words and her or his institutional authority (Hamilton 1998) and, simultaneously, creates a sense of vivid memory, emphasising the moment's importance in the patient's life story. The patient states that he broke down in tears while revealing the news to his wife, which further highlights his identity transition from healthy adult to a cancer patient. The story ends by setting expectations for later events – having the treatment. However, these events are not told but only projected, which amplifies the fragmentary nature of the story, as it is not brought to closure in the Labovian sense. Neither does the story appear as a fully-fledged anecdote: it does not conclude with an affective evaluation of the complicating event (see Section 2.1).

Overall, the story begins and ends more or less abruptly, as do the rest of the case stories in the book. This feature connects them to Georgakopoulou's (2007) notion of "small stories", that is, stories less connected with the narrative canon. They also remotely resemble serial stories, as a couple of story snippets from each patient are included. However, I propose that detached case stories represent a distinct multimodal story genre specialised to page-based environments. In the page layout, these stories function as secondary, accompanying texts that particularise or personalise the topic of the main text by voicing and recontextualising lived experience. Longer stories can be presented as fragments in order to match the current focus of the surrounding main text. Moreover, the genre can be considered a 'macro-genre' (see Section 2.1) as it typically activates one or more elementary story genres (e.g. anecdote or Labovian narrative) as additional frames of interpretation through which the presented material can be seen as a fully-fledged story or, alternatively, a story fragment. Finally, detachment functions as boundary work that acknowledges lay experience but, simultaneously, separates and distances it from the authority of institutional expertise.

4 Detached verbal stories: using fictionality to recontextualize scientific knowledge

The second example of detached verbal stories comes from a palaeontology book called *Neandertalinihminen: kadonnut lajittoveri* ('Neanderthal people: our lost relatives'; Valste 2015), written by a seasoned textbook and non-fiction writer with an academic background in biology. In 2019, the author was awarded by the Association of Finnish Non-fiction Writers for his work. In the book, detached fictional storytelling is used, though

Ilmeisesti näin muodostui – naisen ankanan päänsäryn hellitettävä – onnellinen neandertalilaispariskunta, joka sai suuren joukon suloisia, pikkuruisia neandertalilaisvauvoja.

Monet tietävät myös, etteivät neandertalinihmiset osanneet puhua. Toisaalta – mistäpä he olisivat pakisseet, jos olisivat osanneet? Murahtelu, öinä ja irvistykset riittivät hyvin heidän yksinkertaisen elämänsä tärkeimpien asioiden ja tuntemusten välittämiseen.

Paleofiktiota: menninkäisten vaellus

Sieltä he tulevat – lyhyet ja rotevat, matalaotsaiset, paksuihin taljoihin verhoutuneet neandertalilaiset, jääkauden luolaihmiset. Pieni joukko vaeltaa hitaasti, pitkänä jonona. Kömpelöihin karvatöppösiin verhotut jalat uppoavat uuteen lumeen, ja hengitys höyryää ja jäätyy huurteeksi tuuheisiin kulmakarvoihin sekä hileiksi partoihin ja pitkänä roikkuviin takkuihin hiuksiin.

Suuri nenä, taakse viettävä otsa sekä luisu ja kyhmytön leuka tekevät neandertalilaisista jotenkin virtaviivaisen ja eteenpäin menevän näköisiä. Vaikutelmaa korostavat suuret silmät, jotka epäluuloisina tähyilevät ympärillä avautuvaa valkoista maailmaa vahvojen luupaksunosten alta. Kädet puristavat tiukasti alkeellisia aseita: nuijia, keihäitä ja yksinkertaisia kivisiä iskureita.

Joukossa laahustaa miehiä ja naisia, tyttöjä ja poikia. Varsinaisia vanhuksia ei joukossa näy – vain harva neandertalilainen elää edes 35 tai 40 vuoden ikään. Joukosta kuuluu välillä hiljaista puhetta ja yksittäisiä murahduksia jalan lipsahtaessa tai upotessa yllättäen johonkin näkymättömään painautumaan. Vahvimmat miehet vetävät perässään purilaita, joille on kasattu raskaita taljoja ja lihakimpaleita.

Naiset ovat vähän miehiä lyhyempiä mutta yhtä lailla rotevia. Muutamilla heistä on pikkulapsi rinnollaan nahkapussissa, missä lapsi pääsee helposti imemään. Naiset, murrosiässä olevat tytöt ja pojat sekä itseenäisesti tarpomaan kykenevät lapset kantavat selässään nahkoihin kiedottuja, peurantaljoista tehtyjä alkeellisia makuupusseja ja nahkaköysiä,

Tavalliseen kuvaan kuuluvat ilman muuta vankea karvapeite ja heikot henkiset lahjat, melkein pä idiotia. Ainoa asia, jonka nämä sekavaa melua pitävät matalaotsat osasivat, oli eläinten tappaminen ja syöminen. Niin – ja silloin tällöin tietysti myös naapuriluolassa asuvan kiltin perheen tappaminen ja syöminen.

Melkein kaikki tietävät, että neandertalilaisille kävi huonosti, kun me saavuimme näyttämölle. Kun me pitkät, komeat, liehuvahiuksiset, vaaleat, si-

joita tarvitaan asumusten pystyttämisesä.

Koko suurperhe, kaikkiaan vain parisenkymmentä ihmistä näyttää olevan matkalla suure luolaan, jonka suuaukko jo näkyy läheisessä kukkussa olevan kalliojyrkänteen juurella. Siellä tulee olemaan myös lämmin, sillä perheen päämies kantaa mukanaan tulta. Se säilyy kosteisiin lehtiin ja sammaleisiin kiedottuina, tuhkan ympäröiminä hehkuvina hiiliinä ainakin päivän. Lisäksi päämiehellä on mukanaan kuivaa tuolta, taulakääpää, ohuita kuivia risuja ja keppejä uuden tulen tekemistä varten. Jyrkänteen juurella kasvaa metsää, josta on helppo kerätä kuivaa polttopuuta.

Osa joukosta kantaa jäätyneitä lihakimpaleita, jotka ovat peräisin miesten viimeksi kaatamasta saaliista. Umpikujaan ahdistettu, pitkän kar-

van verhoama sarvikuono oli yrittänyt syöksyä metsästäjäjoukon läpi turvaan, mutta se oli tuupertunut lumen puolen tusinan keihään lävisämänä. Miehillä oli onni mukanaan, sillä paritonisen eläimen ryntäyksessä sarvi ei osunut keneenkään eikä kukaan loukkaantunut tällä kertaa.

Lumessa tarpova, menninkäisiltä näyttävä joukko vaelttaa ohi ja katoaa vähitellen lyhyttä arktista päivää seuraavaan hämärään. Heistä jää jälkeen vain tynny, pesemättömien ruumiiden lemu ja lumen painunut ura, jonka tuuli pian tuisuttua peittoon. Iltan pimennettyä yöksi kalliojyrkänteen juurelle sytty kirkas valotäplä, pian sen jälkeen toinen ja kolmas.

Lopulta etäisyydessä tiukkii puolisen tusinaa nuotiota. Kaukaa katsottuna neandertalinihmisten leiripaikka näyttää lämpimältä ja kodikkaalta.

Figure 2: Visually detached fictional story in the Neanderthal book (Valste 2015, 16–17). Reprinted by permission of Finnish Literature Society.

sparingly, to offer an empathetic look at the presumed everyday life of Neanderthals.⁹ In Ryan's (2020, 83) terms, these stories can be considered 'weakly fictional': On the one hand, purely factual storytelling about prehistoric micro-events and individuals involved in them is close to impossible. The undoubtedly fictional (invented) details are needed to achieve verisimilitude – a basic requirement of effective storytelling. On the other hand, the non-fiction book as a global generic frame nevertheless suggests that the presented stories are grounded in paleontological evidence – that they can be "trusted" in providing a general impression of the prehistoric lifeworld. Thus, it is indicated that the stories have a notable relation to reality, which distinguishes them from 'strong fictionality' encountered in fiction proper (ibid.).¹⁰

Similarly to the patient stories in the prostate book, the Neanderthal stories are visually detached from the main text in order to address the boundary between science and its fictionalisation (see also Mellor 2003). As Figure 2 illustrates, the story is again segregated from the main body text by framing it with a distinct background colour. Furthermore, the epistemological step away from factuality – the author's local fictive intent – is announced paratextually in the metafictional heading of the narrative (*Paleofiktiota* 'palaeofiction').¹¹

⁹ Additionally, the book uses pictorial fiction ("artist's impressions") to popularise palaeontological knowledge on the appearance, habitat and culture of the Neanderthals.

¹⁰ Another interesting example of fictionality in the data is that of narrative animal comics. The protagonists are talking animals that tell jokes, raise environmental concerns and discuss them with biologists they meet in the woods. In these cases, the conventions of popular science are mixed with those of funny animal comics. Sadly, space did not permit analysis of these stories.

¹¹ According to Leikola (1992, 121), the genre label *palaeofiction* was originally coined by the Finnish palaeontologist Björn Kurtén (1924–1988) who also published novels about Neanderthals, translated into many languages. Thus, it is also possible to interpret the heading of the story as an intertextual homage to Kurtén.

The story depicted in Figure 2 belongs to the opening chapter of the book. The surrounding main text deals with – as the author puts it – popular and mainly derogatory misconceptions of the Neanderthals, which are then contrasted – as another instance of boundary work – to the current scientific understanding (see Valste 2015, 14–15). In the context of the surrounding main text, the Neanderthal story invites the reader to revise one’s attitudes on an emotional level, as can be observed from the English translation in Extract 2.

Extract 2 Palaeofiction: the journey of the goblins

Here they come – the short, stocky, low-browed Neanderthals clad in their thick fur clothing, the cavemen of Ice Age. The small group walks slowly in a long line. Their feet, covered in crude fur shoes, sink into the snow. Their breath steams in the cold air, frosting their thick eyebrows and leaving flakes of ice on their beards and long tangled hair. With a large nose, sloping forehead and a receding, flat chin, the Neanderthals look somehow streamlined, as if they are making progress. This impression is accentuated by their large eyes under the heavy brow, staring with suspicion at the white world opening up around them. Their hands tightly squeeze their crude weapons: mallets, spears and simple stone choppers.

The group consists of men and women, girls and boys. There are no really elderly people in the group, it is a rare Neanderthal who reaches 35 or 40 years of age. At times, quiet talk can be heard from the group as well as occasional grunts when someone’s foot unexpectedly slips or sinks into an unseen hollow. The strongest men are dragging travois loaded with heavy fur skins and chunks of meat.

[3 paragraphs omitted.]

The goblin-like group, trudging in the snow, wanders by and gradually disappears into the dusk of the short arctic day. All they leave behind is a stale stench of unwashed bodies and a deep groove in the snow, which the wind soon swirls away. Once darkness has fallen, a bright fleck of light appears at the foot of the cliff, followed by another and yet another. Finally, there are half a dozen campfires in the distance. Seen from afar, the camp looks warm and cosy.

As can be observed from Extract 2, the story offers first-hand impressions of the undertakings of a group of Neanderthals in a particular situation. The events are told from the point of view of a stationary observer who is not involved. The focus is on the observer’s sensory experiences: sights, sounds, smells. However, the text is sparse in evaluation, which means it does not offer itself as a fully prototypical story but, rather, an intermediate form between story and report (see Fleischman 1990, 103). The observer’s viewpoint is construed right at the beginning by using a deictic adverb ‘here’, which locates the Neanderthals relative to the observer’s location. Resembling fictive telling, the present tense is used throughout, which locates the teller in a “temporal nowhere” (Fludernik 1996, 189) and foregrounds “description at the expense of events” (Fleischman 1990, 302), thus making the reader a “spectator, an observer of visual reality” (ibid.). In the end, the observer shares her or his emotional reaction of the Neanderthal community and invites the reader to share the positive impression (“seen from a distance, the camp looks warm and cosy”).

Reflecting the generic purposes of popular science books, many informative generalisations about the Neanderthals are embedded in the story, which also emphasises the story’s weakly fictional quality. In the opening sentence, the group is characterised as an exemplar of the whole species (‘here they come – the short, stocky, low-browed Neanderthals clad in their thick fur clothing’). Another generalisation is put forward to explain an observation (‘there are no really elderly people in the group, it is a rare Neanderthal who reaches 35 or 40 years of age’).

Overall, the Neanderthal book illustrates how visual detachment as well as explicit paratextual framing of fictional storytelling can be used in popular science to create a multimodal boundary between global factuality and local fictionality. In the book, fictionality is locally adapted as a rhetorical mode to affect the reader’s attitudes to the prehistoric lifeworld. As Kirstein (1991, 317) argues in discussing the meaning of palaeofiction as a prose fiction genre, “[b]y presenting early and prehistoric people as interacting human beings, palaeofiction is instrumental in overcoming a condescending attitude towards early man”. While the Neanderthal

book creates a clear-cut visual boundary between science and its fictionalisation, it simultaneously overcomes that boundary and creates a fusion of science and fiction in order to bridge the gap between scientific and lay understanding of the Neanderthals at an attitudinal level.

5 Detached visuo-verbal stories: building experiential authority with everyday photography

In this section, I turn to detached stories that come in the form of image-caption complexes. In a text-flow based layout, these multimodal stories – along with elements such as tables, diagrams and headings – are salient units of visual perception that can be used strategically as entry points, particularly for those readers who are skimming through and need to be persuaded to commit to reading (see Stöckl 2017, 265). In what follows, I discuss two examples of image-caption stories. The first one comes from a book dealing with biodiversity and its global decline. The book, titled *Tutkimusmatkoja saarille: luonnon monimuotoisuutta kartoittamassa* (Hanski 2016a), was simultaneously published in English as *Messages from islands: a global biodiversity tour* (Hanski 2016b). The English edition is quoted in this section. The book was given honourable mentions in The Federation of Finnish Learned Societies' Science Book of the Year competition and World Wildlife Fund Finland's Nature Book of the Year competition, both in 2016.

The biodiversity book is characterised by numerous personal stories – both embedded and detached, verbal and multimodal – in which the late author recounts his fieldwork on islands across the globe. Thus, in addition to institutional authority, the book appeals to the experiential authority of the author who has, unlike journalists and other science mediators, first-hand experience of what it is like to be a scientist. In popular science, personal stories of scholars can be understood as a recontextualisation practice that allows us to particularise and personalise the practices of science – to represent them from an individual's point of view. In the biodiversity book, the author's experiential authority is construed not only verbally but also by giving the reader access (albeit limited and curated) to the author's personal photo album.

As a single frame image cannot represent temporal progression, it cannot construe a story by itself, at least in the strictest sense. However, all images have storytelling potential that can be activated by various means (e.g. Bateman 2014) and in our case, through verbal storytelling in the caption. Figure 3 illustrates a typical case in the biodiversity book.

In Figure 3, the photograph is disconnected from the caption by using a small amount of empty space as buffer zone, suggesting a framing relation based on 'separation' (van Leeuwen 2005, 13). A larger amount of space is used for separating the image-caption pair from the main body text. The depicted photograph presents the author giving a seminar presentation. The background consists of another, projected photograph that portrays two scholars as "second-order" participants. In the caption, the author expresses playful delight in getting photographed "with" two of his great influencers. This nicely demonstrates the symbolic and affective significance of personal photographs – how they shape our lives and identities (Chalfen 1981, 110).

As the photo in Figure 3 does not appear as posed or otherwise staged, it presents itself as referentially authoritative – a "real life moment". Furthermore, it appears as a spontaneous, "stylistically unremarkable" (Zuromskis 2009, 53) everyday photograph, for example with compositional dead space on the right-hand side that lends an air of authenticity. As Chalfen (1987, 156) has put it, everyday snapshots construe "an untampered, unmediated (read 'unstaged') view of reality which, in turn, helps readers/viewers believe they are gaining an unconstructed 'inside look'". Prototypical snapshots are made by non-professional photographers, and similarly to stories, they deal with personally important subject matters, which are shared with intimates (see Chalfen 1981, 106).

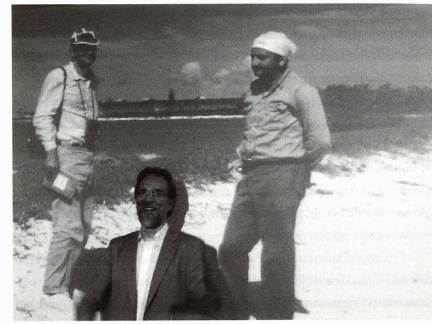
The caption in Figure 3 sets a story frame for the photograph. English translation is provided in Extract 3. The caption in itself is a miniature story that follows the conventions of a genre referred to in SF studies as 'observation'. Observation is an atypical story genre in that it does not focus on a sequence of events but a single moment that is given personal and emotional significance. It unfolds through the stages of EVENT

suojelualueen hyötyjä verrattuna useaan pieneen alueeseen, joiden yhteenlaskettu pinta-ala on yhtä suuri (tästä tarkemmin tuonnempana). Jälkeenpäin voi sanoa, että saariteorian herättämä innostus johti myös ylilyönteihin, yksinkertaistuksiin ja liiallisiin odotuksiin teorian voimasta, mutta tämä oli väistämätöntä. Uusien ideoiden sovellutusalueiden rajat löydetään yleensä yrityksen ja erehdyksen kautta, kuten tässäkin tapauksessa. Vasta ajan myötä kävi selväksi, millaisissa tilanteissa saariteoria oli paikallaan. Samalla teoria vaikutti merkittävästi kokonaan uuden tutkimusalan, suojelubiologian, syntyymiseen 1970-luvulla, missä prosessissa olin itsekin mukana.⁴

Minua alkoi riivata ajatus, että lajien esiintyminen kaikissa pirstoutuneissa elinympäristöissä on jatkuvassa muutoksessa ja että paikalliset sukupuutot ja uusien populaatioiden syntyminen ovat jokapäiväisiä tapahtumia. Aloin pohtia, mitä tapahtuu lajille, kun jotkin sen habitaattilaikut häviävät, esimerkiksi kun ne muutetaan maatalousmaaksi. Riittävätkö mahdollisuudet perustaa uusi populaatio jäljellä oleviin laikkuihin korvaamaan sukupuutot? Eikö ole mahdollista, että laji, jonka levittäytymiskyky on huono, häviäisi kokonaan elinympäristön huvetessa? Saariteorian mukaan näin ei käy, koska kullakin lajilla oletetaan olevan mantereella vakinaiset kannat, joiden ansiosta uusia populaatioita syntyy aina, ei välttämättä heti jokaisen sukupuuton jälkeen mutta joka tapauksessa ennemmin tai myöhemmin.

Onneksi samasta aiheesta oli toinenkin yksinkertainen teoria, johon tutustuin opiskeluaikani. Sen oli julkaissut Richard Levins, nerokas evoluutiobiologi Harvardin yliopistosta. Levinsin teoria perustuu suurelta osin samoihin oletuksiin kuin saariteoria. Ratkaiseva ero on, että Levinsin mallissa ei ole mannerta vaan pelkkä habitaattilaikkujen verkosto. Tässä teoriassa asumaton laikku asutetaan, kun sinne liikkuu yksilöitä sellaisista laikuista, joissa on sillä hetkellä elinvoimainen kanta jäljellä. Lajin sukupuutto koko verkostosta ei ole ainoastaan mahdollista vaan itse asiassa varmaa, jos verkoston rakenne on sellainen, että laikut tyhjenevät nopeammin kuin uusia populaatioita ehtii syntyä. Levins kehitti metapopulaatiokäsitteen, joka kuvaa verkostomaista populaatiorekennettä, habitaattilaikkujen verkossa elävää populaatiokokonaisuutta.

5/1
214



KUVA 5.1. Pitäessäni seminaariesitelmän Uppsalan yliopistossa toukokuussa 2011 heijastin valkokankaalle kuvan, joka esitti Robert MacArthuria (vasemmalla) ja Richard Levinsia (oikealla) heidän vieraillessaan Edward O. Wilsonin kanssa Dry Tortugasissa Floridassa vuonna 1968. Minusta oli hauskaa tulla yhdistetyksi tällä tavalla kahteen tutkijaan, jotka vaikuttivat merkittävästi ajatteluuni 1970- ja 1980-luvuilla.

HEIJASTETTU KUVA: EDWARD O. WILSON.

Ikävä kyllä en koskaan tavannut Levinsia, joka kuoli tammi-kuussa 2016, mutta minusta tuli hänen innokas seuraajansa ja metapopulaatioekologian kehittäjä (kuva 5.1). Perehdyin Levinsin malliin ja kehitin 1970-luvun loppupuolella ja 1980-luvulla siihen pohjautuvia uusia malleja tuomalla mukaan uusia oletuksia. Tein yhteistyötä matemaatikko Mats Gyllenbergin kanssa entistä mutkikkaampien mallien analysoimiseksi. Se ei kuitenkaan riittänyt minulle, ekologi kun olen. Aloin harkita kentätutkimusta, jonka avulla voisin testata mallien oletuksia ja ennusteita käytännössä. Mutta mikä eliölaji soveltuisi tähän, ja missä tutkimuksen voisi tehdä?

5/1
215

Figure 3: Detached image-caption story in its page context (Hanski 2016, 214–215). Reprinted by permission of Gaudeamus Oy.

DESCRIPTION and COMMENT (Martin and Rose 2008, 65–67; Virtanen 2020, 104–109). The genre seems a particularly natural frame for telling of a photographically captured moment.

Extract 3. **English caption of the seminar photograph in Figure 3 (Hanski 2016b, 151).**

Fig. 5.1. I gave a seminar at the University of Uppsala in May 2010. My presentation included a slide showing Robert MacArthur (left) and Richard Levins (right) during a visit with Edward O. Wilson in Dry Tortugar, Florida, in 1968. I was glad to be documented in this manner with the two researchers who had greatly influenced my thinking in the 1970s and 1980s. (Slide courtesy of Edward O. Wilson.)

The text in Extract 3 follows the structuring conventions of the observation: the first two sentences serve as event description, while the third one is comment, giving personal significance to the photographically captured moment ('I was glad to be documented in this manner').¹² With regard to the interplay of semiotic modes in the telling, it can be argued that the snapshot reinforces the 'tellability' (Labov 1972; Ochs and Capps 2001) of the event. That is, the existence of the photograph implies a prior intention to take a photograph, which in turn implies that the event was considered more or less significant and, in retrospect, worth telling others about (see Chalfen 1987, 125–126). The photograph also supports and complements the information given in the caption. First, the positive facial affect shown in the photo – offering a third-person perspective to the event – verifies the verbally recounted first-person experience of feeling 'glad'. Second, the photograph

¹² In Caple's (2013, 130–131) terms, the caption thus engages in both experiential orientation (= describing pictorial content) and contextual extension (= providing a wider context).

reveals the physical appearance of the first- and second-order participants while the verbal telling does not. Third, from a linguistic point of view, the pervasive use of the past tense positions the caption to tell primarily about the event, not the photograph (see Martinec and Salway 2005: 348); present tense would have construed the opposite position (cf. ‘Here I *am giving* a seminar’). More generally, it can be observed that the verbal story is silent about the topic of the presentation – the focus is purely on the personal significance of the moment. As a whole, the multimodal story presents a scholar who does not only act like a scholar (by giving a seminar) but also emotionally identifies with the professional role.

The second example of image-caption stories comes from a popular biology book called *Metsän salainen elämä* (‘The secret life of the forest’, Hallanaro et al. 2016) dealing with organisms of mainly Finnish forests. The authors of the chapters are mainly biologists. In 2017, the book was awarded the Finnish State Award for Public Information; the book was praised for its illuminative stories about scientists’ fieldwork (TCPI 2017). The sample example is taken from a chapter dealing with the study and mapping of a species of fungus. The chapter is based on the author’s own fieldwork, narrated in the main text and depicted in photographs. Thus, it is another example of science popularisation that particularises and personalises the practices of science by appealing to the scientist’s own experiential authority. The photographs are framed in various ways in the captions, including storytelling. In the example, a snapshot taken by the author herself depicts a group of sheep that are interested in her and particularly her backpack. The photograph is framed by a caption in story form. Figure 4 shows the image-caption complex in its double page context (see the lower photograph on the depicted right-hand page).

Similarly to the previous example, the sheep image appears as an everyday “point and shoot” photograph, with the snapshot aesthetics again contributing to construing referential authority and tellability of the story.



Puronvarsilla tai muilla kosteilla paikoilla kasvavien katajien rungoilta voi löytää katajanhyttökän pieniä, läpikuultavia itiömiä. Nämä muutaman millin levyiset itiömät eivät ole poimuhyttököksi erityisen pieniä. Monet jäkälien päällä kasvavat poimuhyttökälajit ovat vain millin mittaisia, ja onpa sellaisia-kin, jotka kasvavat kokonaan piilossa toisten sienten sisällä. KUVA: EMILIA PIPOPPOLA.

Alusta asti oli selvää, että kehnosti tutkitusta sienijoukosta saataisiin uutta tietoa. Se vaatisi vain sitkeyttä ja lukuisia teltassa vietettyjä öitä. Tosin en osannut aavistaa, mitä kaikkea muuta tulisi vastaan poimuhyttököiden lisäksi. Laidunmetsässä Ahvenanmaan Finströmissä säikähdin pahanpäiväisesti kesken sienten etsinnän, kun kymmenpäinen lammaislauma lähti juoksemaan täyttää vauhtia kohti. Onneksi ne pysähtyivät viime hetkellä kuin seinään jääden tuijottamaan minua ja haistelemaan maassa olevaa reppuani. Sekään reissu ei sentään ollut pelkkää seikkailua; samaiseen lampaiden ihmettelmään reppuun kertyi näytteitä muun muassa keltahyttököistä, joita vasta nyt löydettiin ensi kertaa Ahvenanmaalta.

Suurin osa poimuhyttököitä koskevista tiedoista saatiin kuitenkin aivan muulla tavalla kuin luonnossa retkeilemällä. Avainasemassa olivat Suomen kasvimuseoiden kokoelmat, joihin kerätyt poimuhyttökänäytteet käytiin tutkimuksen aikana läpi. Myös aktiiviset sieniharrastajat toimittivat uusia näytteitä tutkittaviksi.

58



Poimuhyttököiden etsintä vie tutkijaa Suomen laidalta toiselle. Tässä ollaan Utsjoella, Paistunturin erämaa-alueella. Retkellä löytyi kolme poimuhyttökälajia: keltahyttökä, katajanhyttökä ja tipakanhyttökä. KUVA: REHTA KROOTTILA.



Ahvenanmaalainen lammaislauma juoksi täyttää vauhtia lähes poimuhyttökätutkijan syliin. Onneksi lampaita kiinnostikin enemmän reppu – ja kenties siellä olevat eväät. Lampaiden kotilaitumen liepeiltä löytyivät keltahyttökä ja tipakanhyttökä. Kumpaakaan ei ollut ennen tavattu Ahvenanmaalta. KUVA: EMILIA PIPOPPOLA.

59

Figure 4: The sheep story in its page context (Hallanaro et al. 2016, 58–59). Reprinted by permission of Gaudeamus Oy and Emilia Pippola.

This is particularly evident if compared to the close-up photograph of a sporocarp (or fruitbody, a stage in the fungus lifecycle) in Figure 4, framed by a non-narrative caption. The almost hyper-realistic photo – also by the author – clearly contributes to documenting the general characteristics; it does not offer itself as a localised representation of a particular sporocarp. In Kress and van Leeuwen’s (2006 [1996]) model, the image would be a prototypical example of ‘conceptual image’. Conversely, the sheep photo would be an odd choice for representing a whole species of sheep, one reason being the atypical details, such as the sheep’s interest in the backpack, which call for a localised frame of interpretation – a story.

Extract 4 offers an English translation of the caption of the sheep photograph. As can be observed, the caption is in story form and follows the Labovian COMPLICATION–RESOLUTION story structure. The photographed event seems to coincide with the resolution stage of the verbal story. Although the story has a third-person point of view, the protagonist (referred to as a ‘Tremella researcher’) refers to the author – the main body text contains a first-person variant of the same story with some more details.

Extract 4. **Translated caption of the sheep photograph in Figure 4**

An Ålandian flock of sheep ran at full speed almost into the arms of the Tremella researcher. Luckily, the sheep were more interested in the backpack – and possibly the packed lunch inside it. Near the sheep pasture, *Tremella mesenterica* and *Tremella obscura* were discovered. Neither of these had been seen before on Åland. Picture: Emilia Pippola.

The caption in Extract 4 constitutes a minimal Labovian story without an abstract or orientation. *In medias res*, the first sentence narrates the complicating event (‘the flock of sheep ran at full speed almost into the arms of the Tremella researcher’). The second sentence presents the resolution – the sheep settling down – signalled by the sentence-initial adverb ‘luckily’. The remaining two sentences are coda-like: they evaluate the overall success of the field study that has been discussed in the surrounding main text.

As stated, the accompanying photograph coincides with the resolution stage of the verbalised story – it represents the sheep after having settled down to examine the protagonist’s backpack. Thus, the photo illustrates and foregrounds a specific point in the overarching storyline – unlike in Extract 3 where the caption and image coincide (both focus on a single moment). As the photograph is credited to the author, the viewpoint appears maximally ‘authentic’, inviting the reader to view the scene through her eyes. As both a storytelling and popularisation resource, photography taken personally by the author undoubtedly contributes to communicating the ‘what-it’s-like’ dimension of doing science. Moreover, in the sheep photo, some of the animals are gazing directly at the camera. According to Kress and van Leeuwen (2006 [1996], 116–124), direct gaze in images creates an imaginary connection between the represented participant(s) and the reader-viewer. It can be argued that in the example, the viewer is invited to sense the presence of the scientist-as-photographer and imagine oneself as ‘being’ or ‘being in fusion with’ her (see Zappavigna 2016, 277). Zappavigna (*ibid.*) refers to this photographic practice as ‘subjectification’. As a whole, the multimodal sheep story demonstrates how snapshot photographs taken by scientists themselves can be used in personal storytelling to strengthen the scientists’ experiential authority – the what-it’s-like dimension of doing science – as well as to extend the interpersonal activity of ‘sharing’ experiences (Matthiessen and Teruya 2015, 208) beyond verbal communication.

6 Conclusion

The case studies presented in this article have shed light on a number of aspects of multimodal, visually detached storytelling in book-length science popularisations. As a conclusion, I highlight and discuss three of them: boundary work, multimodality, and genre.

Boundary work was observed to be in play particularly in cases where a verbal story was detached from the main body text. It was suggested that in this environment detachment serves to frame the story as non-science by invoking a boundary between two perspectives, for example factual vs. fictional or expert vs. lay (‘etic’ vs. ‘emic; Pike 1967 [1954]). This way, detachment allows us to expand the affordances of storytelling as a

popularisation resource, while simultaneously keeping the excursion to non-science at arm's length. As the presented case studies demonstrate, the ways in which boundaries are appropriated vary considerably according to the field(s) of science covered. Furthermore, it was shown that detachment always indicates a hierarchy: the detached unit offers a secondary perspective. For example, in popularisations of medical knowledge and procedures, the detachment of patient stories can reflect a more general dualistic orientation to illness in which the physical body and the experiencing mind are seen as separate and the former is given primacy. More generally, boundary work done through detachment appears as non-controversial: a boundary is acknowledged, but it is not discussed or debated, unlike often in the main texts of popular science books, as shown by Oikkonen (2013).

With regard to multimodality, the analysis focused on the use of everyday photography in image-caption stories where the protagonist is the scientist-author themselves. It was argued that similarly to first-person storytelling in the verbal mode, personal photography allows scientists to popularise science by personalising its practices and, before all, by displaying experiential authority (“what-it’s-like”) in doing science. Furthermore, it was suggested that spontaneous, aesthetically unremarkable everyday photos have distinct narrative potential in offering an “authentic” and “unmediated” record of the told event. Future research should examine further storytelling practices around image-caption complexes, specifically with regard to how the two components reveal or foreground different aspects of the story participants, setting or storyline. With regard to genres, it was suggested that the ‘observation’ genre, focusing on a single moment in time, offers a particularly suitable story frame for image-caption complexes. However, the employment of different story genres in this particular multimodal environment needs to be investigated further with more extensive data.

Finally, it was evidenced that detachment as a layout affordance has led to the development of unique narrative practices, even genres particular to this environment. As a case in point, the genre of ‘detached case story’ was introduced. It was demonstrated that in particularising the topic of the main text by means of voicing lay experience, case stories have evolved their own distinct visuo-verbal conventions. Particularly, it was shown that in the process of recontextualisation, lay stories can be reduced to a fragment to match the focus of the surrounding main text. Thus, detached case stories are not necessarily fully-fledged stories in the traditional sense. Viewed through a critical lens, the case story can be seen as serving the appropriation and transformation of lay experience to serve the purposes of personalisation in medical and other areas of popular science as well as various fields of contemporary journalism.

In sum, detachment constitutes a core dimension of storytelling in books and other page-based documents with language-dominated layout. Indeed, as detachment indicates a digression from the locally or also globally dominant ways of making meaning, it can be understood as taking part in the articulation of ‘orders of discourse’ – the social ordering of relationships amongst different semiotic choices, ranging from semiotic modes and languages to genres and Foucauldian discourses (see e.g. Fairclough 2003). Thus, detachment of stories in page-based media can have both local and cultural implications, as the case studies in this article have suggested.

Research funding: This work was supported by Helsingin Sanomat Foundation.

Competing interests: No potential conflict of interest was reported by the author.

References

- Bakhtin, M.M. 1986[1953]. The problem of speech genres. In Emerson, C. and Holquist, M. (Eds.), *Speech genres and other late essays*. Translated by V.W. McGee. Austin, TX: University of Texas Press, pp. 60–102.
- Bateman, J. (2011). The decomposability of semiotic modes. In: O’Halloran, K.L. and Smith, B.A. (Eds.), *Multimodal studies: Exploring issues and domains*. London: Routledge, pp. 17–38.
- Bateman, J. (2014). *Text and image. A critical introduction to the visual/verbal divide*. London: Routledge.
- Bateman, J. (2016). Methodological and theoretical issues in multimodality. In: Klug, N.M. and Stöckl, H. (Eds.), *Handbook on language and multimodal contexts*. Berlin: Mouton de Gruyter, pp. 36–74.

- Björninén, S. (2019). The rhetoric of factuality in narrative. Appeals to authority in Claas Relotius's feature journalism. *Narrat. Inq.* 29: 352–370.
- Boström, Peter J. (2015). *Eturauhasen sairaudet. Ennaltaehkäisy, tutkimukset ja hoito [Prostate disorders: prevention, examination and treatment]*. Helsinki: Tammi.
- Caple, H. (2013). *Photjournalism. A social semiotic approach*. Basingstoke: Palgrave Macmillan.
- Chalfen, R. (1981). Redundant imagery. Some observations on the use of snapshots in American culture. *J. Am. Cult.* 4: 106–113.
- Chalfen, R. (1987). *Snapshot versions of life*. Bowling Green, OH: Bowling Green State University Popular Press.
- Charon, R. (2006). *Narrative medicine. Honoring the stories of illness*. Oxford: Oxford University Press.
- Dahlstrom, M. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. *Proc. Natl. Acad. Sci. Unit. States Am.* 111: 13614–13620.
- Eggins, S. and Slade, D. (1996). *Analysing casual conversation*. London: Equinox.
- Fairclough, N. (2003). *Analysing discourse. Textual analysis for social research*. London: Routledge.
- Fleischman, S. (1990). *Tense and narrativity. From medieval performance to modern fiction*. Austin, TX: University of Texas Press.
- Fludernik, M. (1996). *Towards a 'natural' narratology*. London: Routledge.
- Gabriel, Y. (2004). The voice of experience and the voice of the expert – can they speak to each other? In: Hurwitz, B., Greenhalgh, T. and Skultans, V. (Eds.), *Narrative research in health and illness*. London: Blackwell, pp. 168–185.
- Georgakopoulou, A. (2007). *Small stories, interaction and identities*. Amsterdam: John Benjamins.
- Gieryn, T.F. (1999). *Cultural boundaries of science. Credibility on the line*. Chicago, IL: University of Chicago Press.
- Hallanaro, E.-L., Kuusela, S., Juslén, A. and Rytteri, T. (Eds.) (2016). *Metsän salainen elämä [The secret life of forest]*. Helsinki: Gaudeamus.
- Hamilton, H. (1998). Reported speech and survivor identity in on-line bone marrow transplantation narratives. *J. Socioling.* 2: 53–67.
- Hanski, I. (2016a). *Tutkimusmatkoja saarille. Luonnon monimuotoisuutta kartoittamassa*. Translated by Jorma Keskitalo in cooperation with the author. Gaudeamus, Helsinki.
- Hanski, I. (2016b). *Messages from islands. A global biodiversity tour*. Chicago, IL: University of Chicago Press.
- Herman, D. (2009). *Basic elements of narrative*. London: Wiley-Blackwell.
- Hiidenmaa, P. (2020). Trendinä tarinallinen tietokirja [Narrativity as a trend in non-fiction]. In: Virtanen, M.T., Hiidenmaa, P. and Nummi, J. (Eds.), *Kertomuksen keinoin. Tarinallisuus mediassa ja tietokirjallisuudessa*. Helsinki: Gaudeamus, pp. 23–50.
- Hiidenmaa, P., Virtanen, M.T., Satokangas, H., Vitikka, E., and Lindh, I. (2018/2018). Tiedonkerronta. Esitystavat ja tekijän läsnäolo kotimaisessa tietokirjallisuudessa [Narrative popularisation. Rhetorical modes and authorial presence in contemporary Finnish non-fiction]. *Avain* 4: 82–86.
- Hiippala, T. (2014). Multimodal genre analysis. In: Norris, S. and Maier, C.D. (Eds.), *Images and texts. A reader in multimodality*. Berlin: De Gruyter, pp. 111–123.
- Hood, S. (2016). Ethnographies on the move, stories on the rise. Methods in the humanities. In: Suellen, S., Hood, S. and Maton, K. (Eds.), *Knowledge building: educational studies in legitimation code theory*. London: Routledge, pp. 117–137.
- Kirstein, B. (1991). Paleofiction and language origins. In: Jonker, A., Wind, J. and von Raffler-Engel, W. (Eds.), *Studies in language origins*. Amsterdam: John Benjamins, pp. 311–329.
- Kress, G. (2013). Multimodal discourse analysis. In: Gee, J.P. and Handford, M. (Eds.), *The Routledge handbook of discourse analysis*. London: Routledge, pp. 35–50.
- Kress, G. and van Leeuwen, T. (2006[1996]). *Reading images. The grammar of visual design*, 2nd ed. London: Routledge.
- Labov, W. (1972). *Language in the inner city. Studies in the Black English vernacular*. Philadelphia, PA: Pennsylvania University Press.
- Leikola, A. (1992). Björn Kurtén, scientist and writer. *Ann. Zool. Fenn.* 28: 117–122.
- Linell, P. (1998). Discourse across boundaries. On recontextualizations and the blending of voices in professional discourse. *Text & Talk* 18: 143–157.
- Martin, J.R. and Rose, D. (2007). *Working with discourse. Meaning beyond the clause*. London: Continuum.
- Martin, J.R. and Rose, D. (2008). *Genre relations. Mapping culture*. Sheffield: Equinox.
- Martinec, R. and Salway, A. (2005). A system for image–text relations in new (and old) media. *Vis. Commun.* 4: 337–371.
- Matthiessen, C. and Teruya, K. (2015). Registerial hybridity. Indeterminacy among fields of activity. In: Miller, D. and Bayley, P. (Eds.), *Hybridity in systemic functional linguistics*. Sheffield: Equinox, pp. 205–239.
- Mellor, F. (2003). Between fact and fiction. Demarcating science from non-science in popular physics books. *Soc. Stud. Sci.* 33: 509–538.
- Muntigl, P. (2004). *Narrative counselling. Social and linguistic processes of change*. Amsterdam: Benjamins.
- Nielsen, H., Phelan, J. and Walsh, R. (2015). Ten theses about fictionality. *Narrative* 23: 61–73.
- Nørgaard, N. (2018). *Multimodal stylistics of the novel*. London: Routledge.
- Oikkonen, V. (2013). Competing truths. Epistemic authority in popular science books on human sexuality. *Eur. J. Engl. Stud.* 17: 283–294.
- Ochs, E. and Capps, L. (2001). *Living narrative*. Cambridge, MA: Harvard University Press.
- Patton, M. (1990). *Qualitative evaluation and research methods*. London: Sage.

- Pike, K. (1967[1954]). *Language in relation to a unified theory of the structure of human behavior*. Hague: Mouton.
- Ryan, M.-L. (2020). Fact, fiction and media. In: Fludernik, M. and Ryan, M.-L. (Eds.), *Narrative factuality*. Berlin: De Gruyter, pp. 75–94.
- Stewart, H. (2015). Dissolving dualism in medicine. Reuniting the body and mind through patient narratives. *Res Cogitans* 6: 15.
- Stöckl, H. (2017). Multimodality in a diachronic light. Tracking changes in text-image relations within the genre profile of the MIT Technology Review. *Discourse, Context and Media* 20: 262–275.
- TCPI = The Committee for Public Information (2017). Myönnettyt palkinnot [Previously awarded prizes]. Available at: <https://www.tjnk.fi/fi/valtioneupalkinnot/myonnettyt-palkinnot> (28.4.2020).
- Tomasello, M. (2008). *Origins of human communication*. Cambridge, MA: MIT Press.
- Turney, J. and Bell, A. (2014). Popular science books. In: Bucchi, M. and Trench, B. (Eds.), *Routledge handbook of public communication of science and technology*. London: Routledge, pp. 15–26.
- van Leeuwen, T. (2005). *Introducing social-semiotics*. London: Routledge.
- Valste, J. (2015). *Neandertalin ihminen. Kadonnut lajitoveri. [Neanderthal people. The lost relatives]*. Helsinki: SKS.
- Virtanen, M.T. (2020). Kertomuslajit tiedettä omakohtaisesti popularisoivassa tietokirjallisuudessa. Systemis-funktionaalinen näkökulma [Generic frames of scientists' personal stories in popular science books. A systemic-functional approach.]. In: Virtanen, M.T., Hiidenmaa, P. and Nummi, J. (Eds.), *Kertomuksen keinoin. Tarinallisuus mediassa ja tietokirjallisuudessa*. Helsinki: Gaudeamus, pp. 79–111.
- Zappavigna, M. (2016). Social media photography. Construing subjectivity in Instagram images. *Vis. Commun.* 15: 271–292.
- Zappavigna, M. and Martin, J.R. (2018). *Discourse and divisionary justice. An analysis of youth justice conferencing*. Basingstoke: Palgrave Macmillan.
- Zappavigna, M. and Zhao, S. (2017). Selfies in 'mommyblogging'. An emerging visual genre. *Discourse Context & Media* 20: 239–247.
- Zuromskis, C. (2009). On snapshot photography. Rethinking photographic power in public and private spheres. In: Long, J.J., Noble, A. and Welch, E. (Eds.), *Photography. Theoretical snapshots*. London: Routledge, pp. 49–62.