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Two kinds of pink: development and difference in Germanic colour semantics

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ABSTRACT

This article traces the birth of two different pink categories in western Europe and the lexicalization strategies used for these categories in English, German, Bernese, Danish, Swedish, Norwegian and Icelandic with the cognate sets pink, rosa, bleikur, lyserød, ceris.

In the 18th century, a particular shade of light red established itself in the cultural life of people in Western Europe, earning its own independent colour term. In the middle of the 20th century, a second pink category began to spread in a subset of the languages. Contemporary experimental data from the Evolution of Semantic Systems colour project (Majid et al., 2011) is analysed in light of the extant historical data on the development of these colour terms. We find that the current pink situation arose through contact-induced lexical and conceptual change. Despite the different lexicalization strategies, the terms' denotation is remarkably similar for the oldest pink category and we investigate the impact of the advent of the younger and more restricted secondary pink category on the colour categorization and colour denotations of the languages.

1. Introduction

What do people call the natural colour of the petals of the Musk-mallow flower (Malva moschata)? An English speaker would probably say that they are *pink*. The word *pink* also exists in Bernese Swiss German but it would not be used for the colour of this particular flower – *rosa* or maybe *rosarot* would work far better. A German speaker would likewise not use the

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loanword *pink* and would probably opt for *rosa*. A Danish speaker would never use the loanword *pink* for this particular hue and would say *lyserød* 'light red' instead. Her Swedish neighbour would most likely not use the cognate term *ljusröd*, however, preferring *rosa* or maybe *skär*. *Skär* is not a word in Norwegian, though *rosa* is. Icelandic does not have any of the above mentioned cognate terms, instead the word *bleikur* would be used.

The goal of this paper is to investigate various words used for a particular part of the colour spectrum in English, German, Bernese Swiss German,[1] Danish, Swedish, Norwegian and Icelandic. We will discuss cognate sets (i.e. groups of words that are etymologically related, like the single cognate set rosa that includes German *rosa*, Swedish *rosa* and Norwegian *rosa*) and cognate terms (i.e. the terms in a set, i.e. German *rosa*). From the short discussion above it is already clear that there are several different cognate sets used in these related languages for this colour and that cognate terms do not necessarily denote the same kind of colour. We will argue that many of the languages divide the colour area in these languages into two parts that we will label PINK1 and PINK2 and we will investigate the different lexicalization strategies used for these sub-areas.

We will need to define PINK1 and PINK2 and list the words that denote these colour areas. This will be done in Section 4 and will be followed by a general discussion. First, however, we will take a brief look at previous research into colour in general, and PINK, in particular, in Section 2. The methods used in this study are reviewed in Section 3, results are discussed in Section 4, and the paper ends with some concluding remarks in Section 5.

2. Background

Until recently, linguistic colour studies were almost synonymous with the Berlin–Kay paradigm and their landmark publication Basic Color Terms: Their Universality and Evolution (1969). Recently, in what Paul Kay and colleagues have called a historical "pendulum swing" (Regier et al., 2009, p. 171; see also Regier and Kay, 2009), several researchers have shifted focus from universality to diversity-oriented studies (for key publications in the diversity paradigm, see also Saunders, 1992, 1999; van Brakel, 1993; Lucy, 1997; Roberson et al., 2000; Roberson, 2005; Wierzbicka, 1990, 2006, 2008). In this new research climate, sociohistorical and cognitive approaches have proven particularly useful for exploring areal semantic trends and micro-diversity in the visual semantics of closely-related languages. This study is based on the kind of universality-seeking experiments pioneered by Berlin and Kay but will also make use of the diversity paradigm to explain why the diversity arose.

The conceptual change by which a new colour category is accepted into a language is a gradual process (cf. MacLaury, 1997, pp. 113–126): at first there is a situation where two terms are overlapping near-synonyms. This can develop into a second stage, where the two terms are still overlapping, but one of them is focused on a marginal area: the two terms focus on different hues, levels of lightness or levels of saturation. A third stage develops when the marginal term serves as a hyponym of the more general one and in a fourth stage, there is focus not on the similarities between the terms and the colour areas they label, but on their differences. The category then splits.

Casson (1997) claims that the whole idea of colour, as it is seen today in Western Europe, is a product of social history and of particular events and innovations which took place in the Renaissance. At the beginning of the Renaissance, Venice and Florence took over from Byzantium and the Middle East as the primary exporters and manufacturers of dyes. This led to an "explosion of colour" in the next few centuries in Europe (see also Gage, 1993, p. 131). The Renaissance was a technological and conceptual watershed in the history of visuality in European social life and the way in which the colour feature "hue" gained prominence over the feature "lightness" can be clearly seen in the evolution of the English colour lexicon (Casson, 1994).[2] For Casson there is a strong link between conceptual innovation and the evolution of word meanings. He says: "Culture members, responding to increases in societal complexity and diversity, restructure their systems of colour categorization by differentiating new concepts and innovating new vocabulary" (Casson, 1997, p. 237).

The societal complexity and diversity of colour in Europe seems to have come in two major waves. Data from English shows that in the first wave, from the 15th to the 17th century, most new colour names came from dyestuffs, pigments or fabric (Casson, 1994, pp. 14–15). The second wave, starting in the 18th and 19th century, also saw a rapid enlargement of the colour lexicon in English, due to technological advances that made exact nuances of colour easier to produce (Casson, 1994, pp. 16–17) and to the increased availability of Indian cotton fabrics that were far easier to dye (Hannah Hodacs, pc.) The colour names in the second wave were less tied to dyes and pigment and more to objects of colour – such as roses (Casson, 1994, p. 18).

Jones also notes that starting in the 17th century and continuing into the 19th century, many important discoveries were made in colour chemistry, which "vastly expanded the available range, as well as improving stability and replicability. New inorganic synthetics became known internationally, in an unparalleled succession" (Jones, 2013, p. 107).

[1] The term Bernese Swiss German is used for a variety of Swiss German characterized by specific dialectological features and is mostly spoken in the Swiss plateau part of the canton of Bern and in some neighbouring regions.

[2] MacLaury finds a general pattern in the world's languages where "the lightness categories undergo a development through which lightness is demoted in importance while hue is elevated" (MacLaury, 1992).

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Table 1
Median age, number of speakers and gender for EoSS participants.

	Median age	Speakers	Females
English	21	21	9
German	21	20	10
Icelandic	25	25	10
Danish	26.5	20	11
Swedish	24	20	10
Bernese	24	20	10
Norwegian	28	20	10

The spread of the idea of the new, independent colour denoted by terms like *pink* and *rosa*, presumably has its roots in this second wave of the "colour explosion".

3. Methods

In our study, we use data from the Evolution of Semantic Systems (EoSS) project that investigates how meanings vary over space and change over time. The project concentrated on four different categories, namely containers (kinds of objects), body parts (parts of objects), spatial relations (how objects are related to one another) and colour (attributes of objects). Data from 50 Indo-European languages (and some non-Indo-European languages) was elicited for these categories. This large-scale project uses "phylogenetic methods to understand the evolutionary dynamics of semantic change", with the goal of "bringing together linguistics, evolutionary anthropology and cognitive science" (Majid et al., 2011, p. 6). We will focus on a sample of the colour data set to do a critical and interpretative analysis of data from seven selected Germanic languages: English, German, Bernese Swiss German, Danish, Swedish, Norwegian and Icelandic.[3]

In the colour elicitation sessions, EoSS made use of a standardized visual toolkit. 20–25 speakers of each language took part. Only persons who considered themselves to be native speakers of the languages in question and who had spoken this language during childhood were accepted into the study. Striving for roughly comparable groups across languages, participants were recruited from undergraduate classes at universities. The experiments took place in available rooms at the universities. Information on gender distribution and average age for the participants is summarized in Table 1. Participants were screened for colour blindness using Waggoner (2002).

The elicitation tasks in the EoSS project included a free listing task to identify the basic colour terms[4] of the language, and a focal colour identification task, to get speaker judgements of the best exemplar of each basic colour term. The results of these tasks had limited pertinence to the present analysis. Here we will mostly focus on the colour naming task, which involved showing the speakers coloured chips, one by one. The chips were displayed on a neutral grey[5] background, under natural daylight, supplemented, when necessary, by a light bulb with a minimum temperature of 5000 K (this produces light comparable to daylight). Of the 84 chips, four were achromatic (i.e. grey scale), and the remaining 80 varied in hue, lightness and saturation – there were 20 equally spaced hues at 4 degrees of lightness. All chips were identified using the Munsell Colour chart. Saturation varied, but colours were generally at the maximal possible saturation for that point in the colour space. The colour set was developed by Majid and Levinson (2007, see also Majid, 2008). Participants were given the following instructions (in translation):

> "In this task, I will show you some colours. I will show them to you one at a time and I would like you to tell me what colour it is. Just tell me the first colour that comes to your mind. You can use the same name more than once as we go through the colours. Do not give long descriptions." (Majid et al., 2011, p. 27).

3.1. Data coding

The elicitation sessions were audio recorded, and the sessions were transcribed in full. For each chip, one or more main responses were extracted from the full response. The main response is the overall colour category (or categories) referred to in the full response. This English full response from our data: *ah, I know what that colour is, it's like a light purple*, thus led to *purple* recorded as the main response. If more than one response was given, as in the full response *it's beigey-green*, both

[3] The data was provided by ANONYMIZED (English, collected in London), ANONYMIZED (German, collected in Munich), ANONYMIZED (Bernese Swiss German, collected in Bern), ANONYMIZED (Danish, collected in Aarhus), ANONYMIZED (Swedish, collected in Stockholm), ANONYMIZED (Norwegian, collected in Oslo) and ANONYMIZED and ANONYMIZED (Icelandic, collected in Reykjavik). All data providers are native speakers in the languages they worked on.

[4] Berlin and Kay (1969) proposed the notation of basic color terms and put forward the hypothesis of the universality of basic color terms across languages. A color word is said to be a basic color term if it satisfies several linguistic criteria including being very frequent, salient in free listing tasks and lacking in major restrictions when it comes to which semantic domains it can refer to.

[5] 50% grey, R 128, B128, G128.

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English Major Responses																					
white	A	blue	blue	blue	blue	purple	pink/ purple	pink	pink	pink	pink	peach	peach	yellow	yellow	yellow	green	green	green	green	green
grey	B	blue	blue	blue	blue	purple	purple	pink	pink	pink	pink	orange	orange	yellow	yellow	green	green	green	green	green	green
grey	C	blue	blue	blue	blue	purple	purple	purple	pink	pink	red	orange	brown	brown	green	green	green	green	green	green	green
grey	D	blue	blue	blue	blue	purple	purple	purple	purple	purple	maroon /red	brown	brown	brown	green	green	green	green	green	green	green
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11

Fig. 1. Each cell is labelled by the term that the most experiment participants used for the cell.

beige and *green* were noted as main responses. The full response light green or murky green would give the main response green. This simplification was necessary for comparing several languages in the time frame of the current project. Coding decisions and accuracy were double checked by the EoSS PIs and corrections were made after discussion with the local researchers. The coding was also discussed and further fine-tuned in a workshop with the Germanic languages data contributors.

4. Results and discussion

In this section, we will go through two evidence for two separate but related colour categories (PINK1 and PINK2), and discuss the various ways they have been lexicalized in the languages.

4.1. Result visualizations

We will start with a note on result visualization. Fig. 1 represents the majority responses per chip for English, displayed in a colour grid. We will refer to chips with their EoSS row-column ID (e.g. A2, C16 etc.), but have included a Munsell code and HTML Hex code conversion table in Appendix A.

The stimuli colours in this two-dimensional grid are arranged according to hue (red vs. blue vs. green etc, displayed left to right, in twenty columns) and lightness (in four rows: the top row is lightest, the bottom row is darkest) with four achromatic colours (greyscale) on the left-hand side. The chromatic colour grid is cylindrical in form, and the flattened visualizations in Fig. 1 and below have been centred on the pink-red hues for convenience.

In Fig. 1, we see that in English we find the colour terms *peach*, *orange*, *maroon* or *red*, and purple on the boundaries of *pink*. This figure is based on the most frequent response. In Fig. 2, we see the EoSS data for English *red*. Two people called B1 *red*; four called C2 *red*; two called D2 *red*; and six called D1 *red*. However, the centre for English *red*-usage is in C1: when shown this colour chip, 19 of the 20 participants answered red, or modifications of *red*, like *reddish*.

4.2. General results

The Icelandic speakers provided 9 modal colour terms[6] in the EoSS experiment. Swedish, Danish, Norwegian and English speakers used 10 modal terms, and the German and Bernese Swiss German speakers gave 11 terms. The modal colour terms are displayed in Table 2. Behind these numbers, we find some small, but interesting differences. The English dataset has *maroon*, a colour that none of the other Germanic datasets have a cognate term for (with an exception of a single mention in Swedish). Also, the English speakers provided the modal term *peach*, while all the experiment participants of the other languages have an equivalent of 'skin coloured'[7] (On 'skin coloured', see Zimmermann et al., this volume). The Icelandic dataset does not have a cognate to *turquoise*. The English data set does not have *turquoise* in the list of modal terms but it does exist as a minor colour term in the data. The Bernese Swiss German results appear to give prominence to the *violett-lila* distinction, which is also familiar in German and the mainland Scandinavian languages, though it is less salient there.

4.3. Defining PINK1 and PINK2

If we look at English *pink* and consider its potential translation equivalents (as judged by the bilingual authors of this paper), then we find a rather intriguing pattern. The most noticeable difference between English and the two German varieties (Bernese Swiss German and German German) is that English has only one term *pink*, whereas the German varieties have two "pinks": *pink* and *rosa*. Icelandic has the native term *bleikur* (originally meaning 'pale'); Swedish and Norwegian have *rosa*, not *pink*. Swedish, in addition, has a term *cerise*. Danish has *pink*, and while *rosa* exists in the language too, it did not

[6] A term is judged to be a modal term if it is the majority response in the naming task for at least one tile.

[7] Bernese Swiss German has *hutfarb*, a skin colour concept, which is slightly less prominent than equivalents in German and Scandinavian languages.

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	A																				English *red* responses
	B										2										
	C										19	4									
	D										6	2									
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11

Fig. 2. The number of people who answered *red* for each cell.

show up in the experiment. The most common translation for English *pink* in Danish it not the Danish loanword *pink*, however, but *lyserød* 'light red'.

To what extent do these native speaker intuitions match the psychological reality of speakers' responses? Are these terms equivalent?

These words represent five different cognate sets: *pink*, *rosa*, *cerise*, *lyserød*, and *bleikur*, and we will discuss these cognate sets one by one. Evidence from Munsell chart experiments suggest that these five cognate sets provide the lexical expressions representing two colour categories, which we have termed PINK1 and PINK2. More precisely, we will discuss these denotations as they can be measured by our experiments as footprints on a Munsell chart. Colour terms (like *pink* or *rosa*) are the lexical labels of abstract colour concepts, that in addition to a denotational footprint also construe other aspects of meaning, such as metaphorical, indexical and grammatical meanings. This article will only deal with the denotational footprints of such abstract colour concepts, and we readily acknowledge that this only makes up a part of the meaning of the concept. We will, follow the research tradition in this field and use the term *category* as a synonym for the denotational footprint aspect of the more general colour concept. Categories are labelled by small capitals (like PINK1 or PINK2 or RED). A *cognate set* with similar terms (like *rosa* in German and *rosa* in Swedish) can overlap to a greater or smaller degree in their colour category. Terms from different cognate sets (like Danish *pink* and Swedish *ceris*) can also have (or not have) nearly the same overlapping extension on the Munsell chart, and thus be said to denote nearly the same colour category.

Foreshadowing our results, we believe that PINK1 and PINK2 are roughly shared across several of the languages, and that PINK1 has a larger extension on the Munsell chart than PINK2. PINK2 will be therefore discussed first, so that its effects on PINK1 will be clearer.

4.4. PINK2

4.4.1. The pink cognate set

Fig. 3 shows the answer distribution in the EoSS experiments for the term *pink* in English, German, Bernese Swiss German and Danish (Fig. 4).

All of the twenty German consultants in the EoSS elicitation used the term *pink*, as did all the English speakers. Both Danish and Bernese Swiss German *pink* was used by 14 out of 20 EoSS participants. With 84 colour tiles and 20 speakers, there are a total of 1680 colour namings of tiles. 71 of these were *pink* in German, while 145 of them were *pink* in English.

This leads us to a first hypothesis: that we are dealing with at least two kinds of PINK colour categories. English *pink* is a very "broad" colour, clearly different from the much more "restricted" *pink* of German, Bernese Swiss German and Danish.

Fig. 3 shows a grid analysis of *pink* in English, German, Bernese Swiss German and Danish. Danish *pink* is a denotational subset of the English *pink* on the Munsell chart, and is very similar to German *pink*. German *pink* covers fewer cells than English *pink* but has also spread towards the darker (lower) edge and also covers C18, which English *pink* does not. German *pink* also has a stronger representation in the entire C-row, specifically in C19 and C20, than English *pink*.

Most noticeably, German *pink* was used considerably more than its Danish counterpart. We should therefore take seriously the possibility that the differences in usage patterns of Danish *pink* and German *pink* could reflect a conceptual difference. But for now the main hypothesis is clear: English *pink* differs conceptually from the other *pinks*. The usage patterns of the "Continental *pinks*" (i.e. German, Bernese Swiss German, and Danish) show a different and more restricted colour category than English *pink*.[8]

We will focus on *pink* in English vis-a-vis Danish and German. *Pink* in Bernese Swiss German has a complex interaction with *rosa* and *rosarot* which will be touched on in Section 4.5.1.

The story of the cognate set *pink* in contemporary Germanic languages is a complex one but only so in recent times. From a historical perspective, it is evident that we are dealing with one old *pink* (English), and three young ones (Danish, German and Bernese Swiss German.). For a discussion of the German loan, see Frenzel-Biamonti (2011).

As we have seen, Danish *pink* and German *pink* are important to speakers in these two speech communities. Speakers of Danish and German may or may not be aware that they are using an originally English word. When words are adopted from one language into another, two scenarios are possible. The new words can adopt more or less the whole package of semantic

[8] The focal responses (best example of colour) for *pink* show that the Continental *pinks* are all centred primarily on C20 and secondarily on B19. English has a slightly different pattern, with a concentration on B19, B20 and to a slightly lesser degree on C20. English also has the least number of people agreeing on a specific tile as the best example of *pink* (6 people for B19).

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Table 2
Modal colour terms in English, German, Bernese Swiss German, Danish, Swedish, Norwegian and Icelandic.

Language	Major colour terms
English	*red*, *maroon*, *peach*, *orange*, *brown*, *yellow*, *green*, *blue*, *purple*, *pink*
German	*rot*, *hautfarben*, *orange*, *braun*, *gelb*, *grün*, *türkis*, *blau*, *lila*, *rosa*, *pink*
Bernese	*rot*, *orangsch*, *gäub*, *grüen*, *blau*, *türkis*, *lila*, *violett*, *rosa*, *pink*
Danish	*rød*, *hudfarvet*, *orange*, *brun*, *gul*, *grøn*, *blå*, *turkis*, *lilla*, *pink*
Swedish	*röd*, *hudfärg*, *orange*, *brun*, *gul*, *grön*, *blå*, *turkos*, *lila*, *rosa*
Norwegian	*rød*, *hudfarge*, *oransj*, *brun*, *gul*, *grønn*, *blå*, *turkis*, *lilla*, *rosa*
Icelandic	*rauður*, *húðlitur*, *appelsínugulur*, *brúnn*, *gulur*, *grænn*, *blár*, *fjólublár*, *bleikur*

content associated with the borrowed word and in that way "fill a gap" in the language. Another scenario is perhaps even more probable, namely that in the process of borrowing, meaning components are added, modified, or perhaps disposed of in the process of semantic integration (on the semantic integration of loanwords, see also Levisen, 2012a, p. 255). The story of *pink* is an example of the latter type. The spread of *pink* from English to German and Danish is the result of language contact, which cannot simply be explained in terms of Anglicization (see also Furiassi et al., 2012). The process resulted in new word meanings and category formations in these languages, categories that were only inspired by, not determined by the original English category. The story of *pink* is a story of hidden diversity: although the lexical items are the same, the meanings – at least the colour categories seen in these experiments – differ. The comparative overview in Section 2 gave us a first clue to how exactly the English *pink* colour category differs from German/Danish *pink*. The usage patterns of Danish *pink* and German *pink* reveal that they have a more restricted denotational footprint than the English *pink*.

Sociohistorically, English *pink* is the "mother of pinks", the original word, which through the process of borrowing spread into a number of modern European languages, including Danish and German. Unlike its Germanic counterparts, English *pink* is well understood, and has been studied in a variety of frameworks (see e.g. Wierzbicka, 1996; Koller, 2008; Biggam, 2012). In the literature, English *pink* is – with *orange*, *grey*, and *purple* – sometimes analysed as a "mixed colour" (Wierzbicka, 1996, p. 326; Kaufmann, 2006, p. 37), implying that English *pink* encodes a combination of 'red' and 'white', in the same way as *orange* is a conceptual mix of 'yellow' and 'red', *grey* of 'black' and 'white', and *purple* of 'blue' and 'red'. The story of the English colour *pink* can be dated to the era of Modern English (Casson, 1997, p. 232). Before its status as label for a colour, *pink* existed as the name for a species of flower, a pale reddish garden plant with the name *pink* (probably Dianthus, OED, pink. See also Casson, 1997, p. 232). Thus, we can reconstruct the historical meaning as based on a visual similarity. A phrase like "Thing X is pink", must have meant "X's colour is like the colour of pinks (the flower)" (on natural prototypes in category formation, see also Biggam, 2012, p. 178). Today's *pink*, however, appears to have lost its similarity-based structure and flowers are likely no longer invoked in speakers' minds when they say the word.

The story of Danish *pink* and German *pink* is different in the sense that the word *pink* was never tied to the world of flowers in these languages. Both languages borrowed the word from English, in all probability through the discourse of fashion and commerce.[9] The two languages already had a word covering partly the same category: Danish *lyserød* and German *rosa*. In the process of semantic integration, *pink* came to denote a subpart of the previous *rosa* colour space in German.

The German colour linguist Caroline Kaufmann explains the relationship between German *pink* and German *rosa* in the following way (Kaufmann, 2006, p. 38):

> "*Pink*, then, is seen as a hyponym of *rosa* – it refers to a very specific (that is, a bold, bright, almost gaudy) shade of *rosa*, thus forming a subcategory of *rosa*."[10] [authors' translation]

Kaufmann's analysis shows that German *pink* is not directly translatable into any English term. It is a bold, bright or gaudy kind of *rosa* (for another discussion on *pink* and *rosa* in German see also Frenzel-Biamonti's study from 2011).

Since Kaufmann's work is based on a large corpus-study of German newspapers, her results focus on the use of the colour terms in written language. Her conclusion to consider *pink* a hyponym of *rosa* is largely influenced by the distribution of the two terms in the newspaper data, where in many cases *pink* might be used instead of *rosa* just to avoid redundancy. This has to be kept in mind when we compare the evaluation of Kaufmann's data to ours. Independently of Kaufmann, we can show that German *pink* has all the signs of being a vital, frequent colour term, that the two colour terms denote neighbouring parts of the colour spectrum and that *pink* is smaller than *rosa*. In Section 4.5.4 we further discuss the claim that the advent of *pink* lead to a change in the denotation of *rosa*.

Danish *pink* does not combine as easily with other colour terms as the German word. Of the 71 times a tile was labelled *pink* in German, 24 included a modifier (e.g. *hellpink* 'light pink') or a compound (e.g. *pinklila* 'pink purple'). Of the 38 times a tile was labelled *pink* in Danish, only 4 included a modifier.

[9] In the DDO entry for Danish *pink* it is noted that the word is used *især om tøj* 'in particular about clothing' (DDO, pink).

[10] "*Pink* wird also als Hyponym zu *rosa* gesehen – es bezeichnet einen ganz bestimmten (nämlich kräftigen, leuchtenden, fast 'knalligen') Rosaton und bildet damit eine Unterkategorie zu *rosa*."

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	A					2	7	18	18	17	14	4	1									English *pink* responses
	B						1	11	19	18	10											
	C								11	11												
	D										1											
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A							3	4	1	1											German *pink* responses
	B								13	3	4											
	C							8	15	18	1											
	D																					
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A																					Bernese *pink* responses
	B								6	3	2											
	C							1	9	11												
	D									1												
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A							2	2	1		1										Danish *pink* responses
	B								8													
	C								6	11												
	D																					
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	

Fig. 3. The number of people who answered *pink* when showed particular chips. For example, the "2" in cell A16 in the English pink responses indicates that when showed that chip, 2 of the 20 participants called it *pink*.

	A							1														Swedish *ceris* responses
	B								1	1												
	C							1	5	9												
	D									1												
		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	

Fig. 4. The number of Swedish speakers who answered variations on *ceris* when shown particular chips.

This could indicate that Danish *pink* is a more recent loan than German *pink*. We do not know exactly when the term *pink* was introduced into Danish. ODS, a historical dictionary of the Danish language, describes the word as a loan from English, citing a text source from 1952. Based on semantic consultations with Danish speakers, *pink* is *skrigende* 'screaming', a colour calling for attention (Levisen, 2012b). The latter aspect is very similar to Kaufmann's description of German *pink* as a *knallig* 'loud' colour. Visual conspicuousness appears to be a central and defining feature of Danish *pink*, not simply "hue". The English colour term *shocking pink* could refer to a category that could be a potential semantic match for the "missing" PINK2 in the English system. From an EoSS viewpoint we cannot determine whether *shocking pink* does the same referential job as PINK2 in the other Germanic languages, since none of the English-speaking participants used *shocking pink*. The sheer lack of examples suggests to us that *shocking pink* is a dispensable colour category in English, unlike say, *pink* in the German system.[11]

To sum up the analysis, *pink* is not *pink*. Behind the shared name, we find at least two different colour categories. English *pink*, the oldest *pink*, stands out from "Continental" *pink* which conceptualizes a different and much smaller visual category than English *pink*. The semantics of Danish and German *pink* is reflective of a profoundly modern, almost unnatural colour, which has wandered off denotationally from those English flowers in which the term *pink* had its origin.

[11] Interestingly, English is not the only Germanic language, which allows for the co-conceptualization of hue (pink) and emotion (shock). Norwegian *sjokkrosa* and Swedish *chockrosa*, provide similar options. *Sjokkrosa* is not attested in EoSS, but there is one instance of Swedish *chockrosa* in our sample, and this example does not fall into the core PINK2 area. From a conceptual viewpoint, it is worth noting that PINK2 concepts are described as *skrigende* in Danish and *knallig* in German, i.e. as inherent properties of "what this colour does", whereas *shocking* captures the emotional and relational response of "what this colour does to you". Based on these initial observations, we do not think that the English phraseme *shocking pink* is identical to PINK2, neither in conceptualization nor the associated extensional range.

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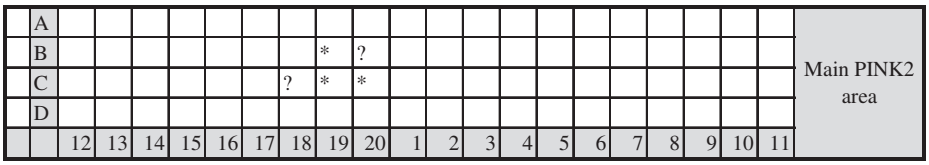

Fig. 5. The cells which, cross-linguistically, have the most recurrent responses for the pink cognate class. Stars indicate more cross-linguistically common cells, question marks indicate not so common cells.

4.4.2. The ceris cognate set

We have now seen that German and Bernese Swiss German have two modal colour terms in the "pink" area, *pink* and *rosa*, and that the denotation of *pink* in these languages is also appropriate for the Danish term *pink*, a screaming, almost unnatural colour. English, Norwegian and Icelandic have no term specialized to this particular area. Swedish, however, does have a term which emerges in the EoSS data for this particular space: *ceris* (see Fig. 4).

Swedish *ceris* resembles Danish *pink*, which is also centred on C20. Sociohistorically, we can ascertain that the two words have taken very different paths to their current meanings. Danish *pink* is a fairly recent loanword from English, where it came to be used as the "unnatural" cousin of *lyserød*, a visually conspicuous, "screaming" colour. *Ceris* is a much older colour term, with an origin in nature, deriving from the French *cerise* 'cherry'.[12] *Ceris-röd* 'ceris-red' is known from 1855 (SAOB, Ceris). However, the typical Swedish speaker does not link the term *ceris* to cherries: the Swedish word for 'cherry' is *körsbär* and most speakers are neither experts in etymology nor fluent in French. In 1889, *cerise* is identified as a kind of brown; in 1904 it is called a kind of red or a kind of brown (SAOB). In contemporary Swedish, the colour denoted by *ceris* is most definitely not a kind of brown. Compared to the Danish and German pink, which speakers feel are very much their own colours, Swedish *ceris* is still often talked about as a kind of *rosa* (Vejdemo, ms.).

It is also worth noting that the term *cerise* exists in Danish, though it did not emerge in the EoSS data. For instance it appears in DDO (DDO, Cerise) where it is described as having a French origin, first introduced in *kirsebær* 'cherry' and with the meaning *en klar rød farve* 'a clear red colour'. This definition would be odd for Danish *pink* and it is clear that, whatever the overlap in extension between Danish *pink* and Swedish *ceris*, the Danish term has a history of "unnaturalness" which is not shared by the Swedish term.

The term *cerise* also appears once in the English data and twice in the Norwegian data, for C20 and for C19, C20 respectively. In the Norwegian data, it occurs only in the compound form *ceriserød* and only from a single speaker. While the term is clearly in use in Norwegian, and is attested back to the early 20th century in newspaper clothing adverts and fashion reports (www.bokhylla.no), it is interesting that its use is so much less frequent than in Swedish despite the closeness of the two language communities. The path of borrowing that we discuss in 4.5.1, with the Scandinavian elite borrowing words from abroad which then gradually spread to the rural or lower class speakers, may go some way towards explaining this: historically, "rural/lower class speakers" describes almost the entire Norwegian population, as for several centuries Norway was under either Danish or Swedish administration, had no nobility, and was essentially an outpost populated by poor farmers and fishermen. That a French colour term should be better established in Swedish than in Norwegian is, given this background, probably not surprising.

4.4.3. Defining PINK2

We shall call the part of the colour space denoted by Danish *pink*, Bernese Swiss German *pink*, German *pink* and Swedish *ceris* PINK2. As most labelled parts of the colour spectrum, it has fuzzy edges, but is centred on B19, C19 and C20. The PINK2 colour space is shown in Fig. 5.

4.5. PINK1

4.5.1. The rosa- cognate set

The term *rosa* functions as a modal colour term in contemporary Swedish, Norwegian, German and Bernese Swiss German.[13]

The distributions of *rosa* are very similar in these languages, as can be seen in Fig. 6.

The main difference between Swedish/Norwegian and German/Bernese Swiss German are the tiles C19–C20. These are frequently called *rosa* by speakers of Swedish and Norwegian, but *pink* by German/Bernese Swiss German speakers. Recall that German and Bernese Swiss German operate with two colour categories in this area, and that *pink* is preferred for the C19–C20 spaces. If the compound *cerisrosa* is removed from the Swedish distribution of *rosa*, Swedish also shows a weaker presence in the C19–C20 slides (see Fig. 7).

[12] One English speaker used the term cerise, for C20.

[13] Moreover, the word *rosa* exists as a marginal, and seemingly different concept in Danish, but the term did not surface in the EoSS data.

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	A					1	5	19	19	17	18	12	4									Swedish *rosa* responses
	B							8	18	18	16											
	C								11	15												
	D										2											
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A						6	14	18	18	17	4	3									Norwegian *rosa* responses
	B							4	17	17	16	1										
	C								9	11												
	D										1											
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A						3	12	16	18	12	3	1									German *rosa* responses
	B						1	4	7	16	8											
	C							1		2												
	D																					
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A						4	16	16	15	11	6	3									Bernese *rosa* responses
	B							4	12	16	12											
	C							1	3	2												
	D									1												
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	

Fig. 6. The number of speakers who answered rosa when shown particular chips.

The historical evolution of *rosa* in Germanic languages is tied to conceptual innovation in German Romanticism in the second half of the 18th century. Modifications of *rot* 'red', like *rosarot*, had been known for some time. The innovation occurred when compounded *rosa-* lost its dependence on *rot* and stood on its own as a separate colour term, *rosa*. The term *rosarot* did not cease to exist in German but came to be reanalysed as a combination of two colours, rather than simply conceptualizing a specific rose-anchored kind of *rot* 'red'. In the EoSS data, we find that a considerable number of Bernese Swiss German speakers still use the term *rosarot*, whereas *rosarot* does not appear in the modern German data (for discussion, see also Kaufmann, 2006, p. 35).

The DWDS dictionary (DWDS, Rosa) gives us the following history of the adjective (authors' translation from German): "[…] As the evolved New High German expressions such as *rosenfarb*, *rosenfarbig*, *rosenrot*, *rosig* no longer denoted the *zartrot* ('subtly red') colour, the flower name (from Latin) *rosa* was introduced into German in the second half of the 18th century. It first appeared, probably nounlike, in compounds such as *Rosaband* – '*rosa* ribbon', later predicative uses evolved, and in vernaculars attributive uses also."

It is well known that the German linguistic-conceptual influence on mainland Scandinavian semantics and vocabulary has been enormous. Innovations in semantic systems are most likely unidirectional: the elite in Scandinavian cities brought in new German categories, and rural/lower class speakers of Scandinavian languages adopted new meanings and conceptual distinctions from the ruling classes (see Galtung, 1981; Haugen, 1987; Levisen, 2012a).[14]

Rosa is first attested as a colour term in Swedish in 1773, according to the SAOB dictionary (SAOB, Rosa). The first examples in the dictionary are with *rosa-färgad* 'rosa-coloured'. At this early stage, *rosa* was also used as a modifier to *rött* 'red', as in *rosa-rött* '*rosa* red' from 1819 (SAOB, Rosa), and later with other colours as well: *rosa-grå* 'rosa grey', *rosa-brun* 'rosa brown', *rosa-gul* 'rosa yellow', *rosa-violett* 'rosa purple', and *rosa-vit* 'rosa white'.

The linguistic journey from *rosen-rött* 'red like roses' to *rosa-rött* 'rose red' to *rosa* 'rosa' in Swedish can be traced in botanical lexicons from the 19th century (at which time they started including colour descriptions) to the present day. Looking at native flowers that do not change colour depending on the quality of the soil, we find that the flowers termed *rosa* in Modern Swedish (including *ljusrosa* 'light rosa' and *mörkrosa* 'dark rosa') were once described as *röd* 'red'. The flowers (such as Malva moschata), which are now described as *ljusrosa* 'light rosa' were once believed to be *ljusröda* 'light red', *rödlätta*

[14] Another source language for many Scandinavian loanwords is French. According to the CNRTL etymological dictionary, the second earliest recorded sentence with rose as an adjective dates from 1853 (http://www.cnrtl.fr/etymologie/rose). The earliest example is from as early as 1165, but it is unclear what colour this rose refers to: the explanation "qui a la couleur rouge clair" (that is of bright red colour; [our translation]) refers to the line "Rose ot la chiere e lentillose" (red was the face and freckled; [our tentative translation]) (Benoît de Ste-Maure, Troie, éd. L. Constans, 5531). In Ott's study of colours in Old French (1899) and in Gingras' study of witch narratives (2001) from the 17th and the 18th century the above sentence is also referred to when speaking of freckles or red hair.

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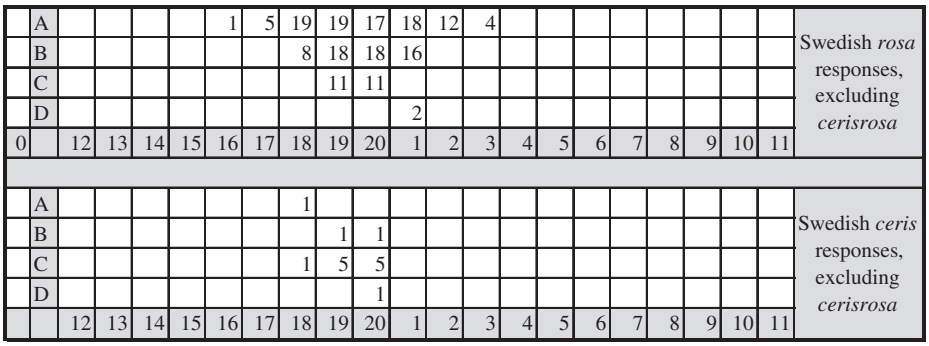

Fig. 7. The number of Swedish speakers who answered with variations on rosa (but not cerisrosa), and the number of Swedish speakers who answered cerisrosa.

'slightly red'[15] or *rödaktiga* 'reddish' in the middle of the 19th century. The *-lätta* and *-aktiga* morphemes imply non-prototypicality. Flowers described as *rosa* (no modification) e.g. Geranium lucidum, were described in the 19th century as *rosenröd* 'red like roses' or *rödblå* 'red blue' – never only *röd* 'red'. Modern *mörkrosa* 'dark rosa' flowers (e.g. Rosa dumalis) were described as *purpurröda* 'purple red' or *rosenröda* 'red like roses' or just *röd* 'red' (Vejdemo, ms).

Rosa is also a Bernese Swiss German term, as is, as mentioned above, *rosarot*. Cognate terms to *rosarot* existed earlier in German, Swedish, Danish and Norwegian, but the term is now archaic or highly specialized. On the face of it, Bernese Swiss German is the most complicated of all contemporary systems, in that it operates with four terms *rot*, *rosarot*, *rosa*, and *pink*. When we take a closer look at the usage patterns, what we find is that speakers who rely on *rosarot* tend not to use *rosa*, and vice versa. This means that, in all probability, we are dealing with a dialectal or sociolectal difference, rather than a semantic and conceptual one. A few speakers do, however, use both *rosa* and *rosarot*. Perhaps, then, there are three different systems (see Fig. 8) for talking and thinking about colour in varieties of Bernese Swiss German.

Variety 1: *rot*, *rosarot*, *pink* (the traditional system, exemplified by speaker 3).
Variety 2: *rot*, *rosa*, *pink* (the German system, exemplified by speaker 2).
Variety 3: *rot*, *rosarot*, *rosa*, *pink* (the combined system, exemplified by speaker 11).

For speakers who distinguish between *rosa* and *rosarot*, the *rosa* term is used for the lighter colours, and *rosarot* for darker ones. More studies are needed to ascertain the usage-patterns of Bernese Swiss German colours terms and their meanings.

As a side note, two instances of the cognate form occurred in the English responses as well: one speaker used *rose* for A19 and A20, and another used *rose red* for B18. Steinvall (2002, 65 pp., 2006, p. 113) investigated the competition between rose/rosy (a word which was not found in our material) and *pink*, and found that the two terms were in competition in the 19th century. In modern times, many fossilized expressions can still be found in corpora with *rose*, but *pink* is clearly the more salient word.

In our analysis, English *pink*, German *rosa*, Bernese Swiss German (variety 1) *rosarot*, Bernese Swiss German (variety 2) *rosa*, Swedish *rosa*, Danish *lyserød* and Icelandic *bleikur* make up a shared colour category. If, however, future studies establish a systematic distinction between the denotational footprints of *rosa* and *rosarot*, then Bernese Swiss German would indeed seem to "do pink" differently from other Germanic variants.

4.5.2. The bleikur cognate set

Referring to *bleikur* as a cognate set may seem strange, since so far we have only seen a single term in the set in the present study. Contemporary cognate terms to *bleikur* exist in Swedish, Norwegian and Danish where the word *blek/bleg* means 'pale', and in English, where the words 'bleach$_N$' and 'bleach$_V$' refer to removing the colour from something, or making it lighter.[16] In Middle English, *bleak* meant 'pale' (OED, bleak).

The term *bleikur* appears to be semantically similar to English *pink*, and Germano-Scandinavian *rosa*, but the history of lexicalization differs. The Icelandic colour lexicon stands out from those of mainland Scandinavia in its active avoidance of German-based (and English-based) words. The Icelandic antipathy to loanwords is well described in the sociolinguistic literature (see e.g. Trudgill, 2011, p. 4; Kristiansen and Sandøy, 2010, p. 3; Svavarsdóttir et al., 2010; Vikør, 2001, p. 216), and the Icelandic colour system is full of internal lexical innovations.[17]

[15] The original meaning was based on *lätt*, an old Swedish concept of "visual appearance".
[16] http://dictionary.cambridge.org/dictionary/british/bleach_1
http://dictionary.cambridge.org/dictionary/british/bleach_2.
[17] The concept of 'colour' itself is a good example. It was brought to English (*colour*) and Dutch (*kleur*) from French *couleur*, and to Danish (*farve*), Norwegian (*farge*) and Swedish (*färg*) via German *Farbe*.

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	A						rosa rot	rosa rot	rosa rot	rosa rot	rosa rot	hut farb	orangsch									Bernese, speaker 3
	B						lila	rosa rot	rosa rot	rosa rot	rosa rot	orangsch	orangsch									
	C						violett	pink	pink	pink	rot	rot	bruun									
	D						violett	violett	violett	violett	wiirot	bruun rot	bruun									
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A						hèu violett	hèu rosa	rosa	hèu rosa	hutfarb	hutfarb	söili farb									Bernese, speaker 2
	B						hèu violett	violett	rosa	hèu rot	hèu rot	orangsch	orangsch									
	C						violett	violett	pink	pink	rot	rot orangsch	hèu bruun									
	D						dunku violett	violett	violett	wiirot rosa rot	wiirot	bruun	bruun									
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	
	A						blassès lila	hèll rosa	rosa rot	hèll rosa	lachs	hèu orangsch	ès hèus orangsch									Bernese, speaker 11
	B						lila	lila	rosa rot	rosa	rosa	orangsch	orangsch									
	C						figolètt, violett	violett	pink	pink	rot	rot	hèll bruun									
	D						violett	violett	bordo	bordo	dunku rot	dunku rot	bruun									
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	

Fig. 8. Data from three Bernese Swiss German speakers.

Bleikur 'pink' appears to have followed the classic path of polysemous evolution described by Evans (1992). First, there is one meaning of a word, M1, used and shared by the speech community. Then a new meaning evolves, M2, and for some time, M1 and M2 co-exist in speakers. They can co-exist for a long time, but usually one of the word meanings conquers the other at a point in time, leaving only, say M2, as the meaning of that word. Translated into the Icelandic case, the story goes like this: In the first phase, *bleikr* was an Old Norse visual descriptor, meaning 'pale, light, intense' (Klein, 1999, p. 156). The visual semantics of the category denoted by *bleikr* described certain things, typically gold, ripe barley fields, and locks of hair (Cleasby and Vigfusson, in Klein, 1999, p. 156). In the second phase, a polysemous pattern was established in which $bleikur_1$ remained a visual descriptor for 'pale', and at the same time $bleikur_2$ emerged as a genuine colour term, meaning 'pink'. In the final phase, $bleikur_2$ came to be the most common meaning.

In our data, *bleikur* (see Fig. 9) has the same centre and main extension as the other cognate sets we have discussed in this section, but it is more widespread, noticeably having a presence in C18 (5 mentions) and A3 (4 mentions).

	A					1	7	16	19	19	17	5	4									Icelandic *bleikur* responses
	B							8	17	19	17											
	C							5	16	18	1											
	D							1														
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11	

Fig. 9. The number of Icelandic speakers who answered *bleikur* when shown particular chips.

4.5.3. The lyserød cognate set

From a cross-Germanic perspective, Danish *lyserød* is lexically speaking quite odd and the term poses several significant questions for colour theory. *Lyserød* is a composite term which means 'light-*rød*', and in that sense it is a formal equivalent of Swedish *ljusröd* 'light-*röd*' and Norwegian *lyserød* 'light-rød'. At least superficially and formally, its denotation seems clearly to be included in *rød* 'red'. Yet we will argue that *lyserød* is, or at the very least is on the way to becoming, an independent colour term.

The first argument for this is its distribution. If we look at the *lyserød*-use, it resembles English *pink*, Swedish and Norwegian *rosa* and Icelandic *bleikur*. It is unlikely that this is a coincidence – rather, all these terms represent different lexicalization strategies for the same colour (Figs. 7–10).

If we take a closer look at tile B20, it reveals that 19 of 20 consultants said that the tile was *lyserød*, and only 1 of 20 called it *en slags rød* 'a kind of *rød*'. Generally, the usage-patterns of *lyserød* and *rød* are relatively complementary to each other, though not in cells C19, C20 and B1. This pattern of distribution can be compared to the patterns of *lilla* and *lyselilla* (Fig. 11) where there is far more overlap between the modified and unmodified term – there is only one chip, A15, that is only ever called *lyselilla* (by two people) and never *lilla* (Fig. 12).

Further, *lyserød* takes modifiers in a way that *lysegrøn* or *lyselilla* do not. A Google search on Danish language web pages returned 4325 hits for "mørk lyserød" 'dark light-red', but only 2 for "mørk lysegrøn" and 79 for "mørk lyseblå".

Lyserød is also a far more frequent term than the other 'light' + 'red' terms, as can be seen in (Table 3).

Finally, we can look at historical data. The first dictionary example of the term is from the 1920's (ODS). Here it says:

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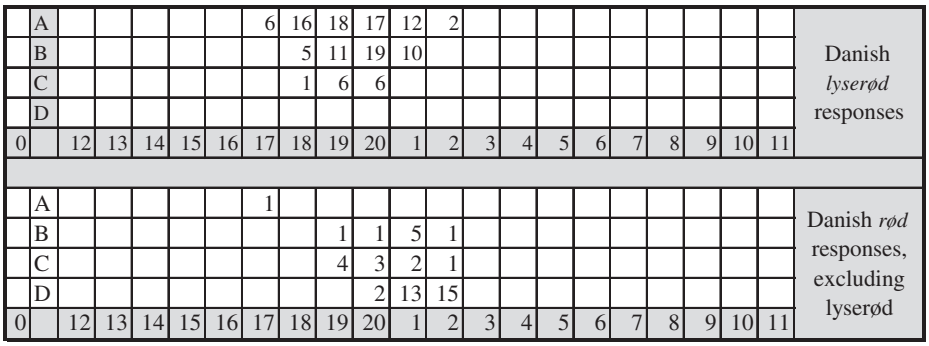

Fig. 10. The number of Danish speakers who answered *lyserød* and *rød*.

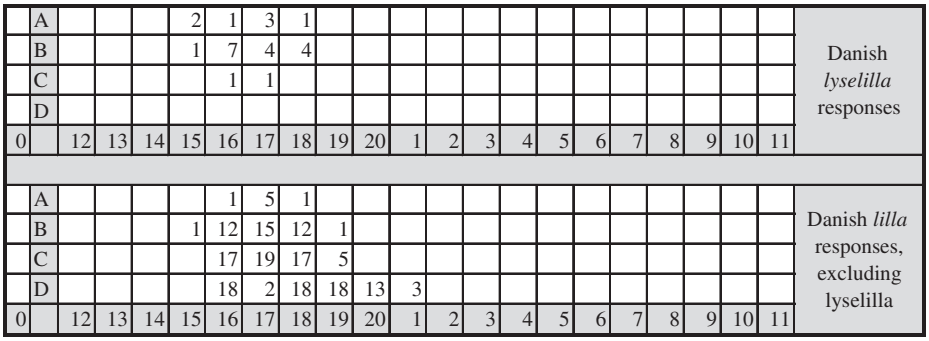

Fig. 11. Danish speakers answering *lyselilla* and *lilla*.

Blandet med det Hvide, som lyserødt, er (den røde farve) munter.

"When mixed with white, as *lyserød*, (the red colour) is cheerful".

This quote is extremely revealing: first it clearly states that *lyserød* is at this point in time is believed to be a kind of *rød*; further, the quote states that *lyserød* is believed to be a mix of *rød* and *hvid*. In general, this sets *lyserød* apart from other colour compounds based on the *lyse*-prefix. Generally, the prefix *lyse-* adds 'lightness', not 'whiteness'. For instance, the cultural association of *lysegrøn* is linked with the colours of a sunlit beech forest in summertime, and *lyseblå* to a sunlit scenery of the sky and the sea. *Lyserød* does not have a similar "sunlit" natural prototype. Its origin is more likely to be in the mixing of paints, that is, in a cultural colour practice, rather than in an idealized cognitive model of "sun" and "nature" (Levisen, pc, semantic consultations with Danish speakers. Also see DDO for more on these terms).

Initial fieldwork with Danish speakers also indicates that they refrain from calling *lyserød* "a kind of *rød*". They prefer to explain the meaning of *lyserød* as 'like something *rød*, with some *hvid* in it'.

The fact that a compound like Danish lyserød has developed into a separate colour category, is not unique in the Scandinavian context. For instance, in Icelandic we find two modal compound terms (*appelsínugulur* 'orange', 'yellow like an orange' and *fjólublár* 'blue like a violet') that seem to have established their own coherent denotations independent of the roots *gulur* 'yellow' and *blár* 'blue'. An even clearer, parallel example comes from the Finnish term *vaaleanpunainen* (*vaalea* 'light' and *punainen* 'red'), which Uusküla (2007, p. 389) establishes as a basic, and young, colour term. Uusküla notes that *vaaleanpunainen* can take further light and dark modifiers, which is what we have found for *lyserød* as well.

4.5.4. Defining PINK1

In the EOSS data there is a colour category (PINK1) which is denoted by a colour term in all the languages in this study. The area has slightly fuzzy edges (see Fig. 12) but the edge of the denotational footprint is almost always found in the same place in the languages. The languages that have the borrowed term *pink* (German, Bernese Swiss German, Danish) and Swedish, which has the secondary term *ceris*, all show a slight difference in one particular border however – at the centre of the *pink* and *ceris* distribution (C19, C20), they have a noticeably smaller presence of their PINK1 terms than Norwegian or Icelandic do. Interestingly, English does not quite fit this pattern – without a clear secondary colour term denoting C19 and C20 it still has a weak PINK1 distribution for these cells. In other words, in languages where the PINK2 colour area is recognized as a separate colour, the PINK1 area is slightly smaller to accommodate it, than the PINK1 area is for (most) languages with no PINK2 colour area.

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	A						*	*	*	*	*	*									PINK1
	B							*	*	*	*										
	C								*	*											
	D																				
0		12	13	14	15	16	17	18	19	20	1	2	3	4	5	6	7	8	9	10	11

Fig. 12. The majority of PINK1 terms fall into these cells.

Table 3
Raw number of light + RED and RED responses in languages.

Light-modified and non-modified RED colours.				
Language	Colour term	Responses, minus the 'light' responses	Colour term	Responses
English	red	32	light red	1
Swedish	röd	89	ljusröd, ljus röd, ljust röd	2
Icelandic	rauður/rautt	86	ljósrauður/rautt, ljós rauður/rautt	2
Norwegian	rød	63	lyserød, lys rød	7
Danish	rød	76	lyserød, lys rød	129
German	rot	93	hellrot, helles rot	0
Bernese	rot	115	hèurot	5

4.6. Minority responses – detailing the complexity of the area

From a German, Swedish and Danish perspective, the English, Norwegian and Icelandic languages seem to be lacking a category. The two-way English *red–pink* system, for example, vis-à-vis the three-way systems *rot–rosa–pink*, and *rød–lyserød–pink*, are reflective of two basically different ways of conceptualizing the "pink space". While this is true, English speakers have other lexical resources, and in fact, the stock of marginal colour terms is huge in English, including terms such as *magenta*, *fuchsia*, *rose*, *cerise*, *puce*, *mauve* and *coral*, most of which are what Alvarado and colleagues (Alvarado and Jameson, 2002; Jameson and Alvarado, 2003) call 'object glosses', due to their origins as the names of objects with a salient prototypical colour. Swedish has the marginal term *skär* whose few uses indicate a very bright kind of PINK1 and which is generally seen as an archaic term. Most of the languages have a range of minor terms covering the PINK1 and PINK2 area – the investigations of which unfortunately lie outside the scope of this paper.

4.7. Possible L2 interference

Table 4 represents the number of speakers of each language that rated themselves as fluent or near fluent (4 or 5 on a 5 point scale) in each given language. Many non-English speakers stated that they were very proficient in English as an L2. German and French the only other languages coming close, and then only within the group of speakers of Bernese in Switzerland. Danish is taught along with English in Icelandic schools, but speakers rate themselves far less fluent in Danish than English in general. Other languages mentioned are Dutch, Russian, Spanish, Danish Sign Language, Catalan, Portuguese, Mandarin, Cantonese and Indonesian, but most of these are only within the grasp of one to three speakers.

We have detected no clear L2 interference effects in the data – the referential range of English *pink* is not more similar to the *pink* of Danish than German or Bernese *pink*, despite the Danish participants stating that they were more proficient in English.

Table 4
Language proficiency of participants rating themselves as fluent or near fluent in different languages. The number in parentheses are the number of speakers who had lived where the rated language was spoken or listed it as a childhood language.

Speakers	Secondary languages													
	English	Swedish	Danish	Norwegian	German	Dutch	French	Russian	Spanish	Danish sign language	Catalan	Portuguese	Mandarin	Cantonese
English							2 (1)		1 (1*)		1 (1*)	1	1 (1)	1 (1)
Swedish	19 (7)					1	1							
Danish	16	3			1 (1)		2 (1)		2 (1)	1				
Norwegian	15 (4)	1			1	1								
German	14 (1)						2							
Bernese	10 (1)				20 (1)		11 (4)	2 (1)	3 (2)			1 (1)		
Icelandic	19 (3)	1	6 (3)	1	2									

The * marks one and the same individual who has lived in many different places.

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5. Concluding remarks

In this paper we have made several claims. First, we claim that there were hardly any lexicalised pinks before the 17th and 18th century in Germanic languages. However, all contemporary Germanic languages have at least one pink colour category (PINK1), and some have two (PINK1, PINK2). PINK1 exists in all the studied languages, and PINK2 in some.

The current pink situation arose through contact-induced lexical and conceptual change:

The colour category PINK1 has been lexicalised through different lexicalization strategies: Swedish *rosa*, Norwegian *rosa*, German *rosa*, Bernese Swiss German *rosa*, English *pink*, Icelandic *bleikur*, Danish *lyserød*. Throughout, the PINK1 area remains remarkably stable.

The colour category PINK2 is lexicalised as German *pink*, Bernese Swiss German *pink*, Danish *pink* and Swedish *ceris*. This colour category is not lexicalised with a salient colour term in English, Norwegian and Icelandic. Further, in the languages where PINK2 is lexicalised, the extension of PINK1 is restricted. PINK2 is less stable than PINK1 in its cross-linguistic distribution, but nonetheless has a clear consistent centre.

In this study we reported on findings from experimental settings. This approach gives an overview of the way speakers in contemporary Germanic languages named and categorized colour. Many of our participants also speak other languages (see Table 4). We have not taken influence from these other languages into account for this article, but would welcome that form of scrutiny from others. A careful analysis of multilingual participants' data might shed light on the way they categorize colour (see Ameel et al. (2005) and Athanasopoulos (2009) for detailed discussions on bilinguals in colour studies.). Furthermore, it is important for future studies to relate our experimental findings to real-world language usage meanings and to add perspectives from corpus research, sociolinguistic interviews and semantic consultations with native speakers.

Visual semantic category formation and social history should go hand in hand in further analyses. The value of an interdisciplinary approach is immediately apparent when we turn to the question of why the PINK1 and PINK2 colour categories arose at a particular time, in a particular place, within a particular speech community. The answer to this cannot be found in categorization experiments – instead we must turn to historical research. In our case, the precursor to the elaboration and differentiation of Germanic colour vocabularies is a series of technological and social developments, such as the emergence of Venice and Florence as major centres for dye manufacturing and the importation of new fabrics from India.

The Renaissance colour explosion (Casson, 1994) resulted in several waves of colour terms spreading across Europe. In the second wave, the chemistry of dye experimentation and the availability of more easily dyed fabric led to the presence of stable colours (reproduced in the same way more or less every time) in the lives of Europeans. One of these colours was a lighter kind of red, which was used often enough to start meriting its own colour term. The colour category PINK1 became more and more salient and spread across Europe, from France, Germany and Britain to Denmark, Sweden, Norway and Iceland. Different lexicalization tools were used in the different languages (and language varieties like Bernese Swiss German) but the colour category stayed more or less the same. Later, a second colour category started becoming present enough in the lives of speakers of some of these languages in Western Europe to merit its own term: PINK2. Where PINK2 had to co-exist with PINK1, the colour area of PINK1 was slightly altered.

There are many more diachronic and synchronic stories to be told about the historical dynamics of colour semantics in European languages. We hope that the present study can inspire more research into the intricacies of contact-induced lexical and conceptual change in the domain of colours.

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Appendix A. EoSS codes, Munsell codes, Hex codes conversion table.

Cell	A0	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20
Munsell code	N9.5	5R 8/6	10R 8/6	5YR 8/8	10YR 8/14	5Y 8/14	10Y 8/12	5GY 8/10	10GY 8/8	5G 8/6	10G 8/6	5BG 8/4	10BG 8/4	5B 8/4	10B 8/6	5PB 8/6	10PB 8/4	5P 8/4	10P 8/6	5RP 8/6	10RP 8/6
HTML code	#F2F2F2	#FEB4AD	#EEBBAA	#F9B98A	#F7BC60	#E7C530	#D2CC2A	#B2D43D	#8CD981	#80D8AC	#77D9BB	#91D3C8	#90D2D3	#97CFDC	#8ECFF2	#A7C8F6	#C4C3E1	#CFC0DC	#E8B7DA	#F5B5C9	#FBB4BB
Cell	B0	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20
Munsell code	N7	5R 6/12	10R 6/14	5YR 6/14	10YR 6/12	5Y 6/10	10Y 6/10	5GY 6/10	10GY 6/12	5G 6/10	10G 6/10	5BG 6/10	10BG 6/8	5B 6/10	10B 6/10	5PB 6/10	10PB 6/10	5P 6/8	10P 6/10	5RP 6/12	10RP 6/12
HTML code	#B3B3B3	#ED6362	#F66028	#DA7511	#C1820D	#A98C1D	#979218	#7D992B	#28A62E	#2BA273	#0AA284	#389E95	#359CA4	#4399B0	#0699D3	#5890D7	#8D84D2	#A480BA	#C374B1	#E06698	#E9637D
Cell	C0	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20
Munsell code	N4.5	5R 4/14	10R 4/12	5YR 4/8	10YR 4/8	5Y 4/6	10Y 4/6	5GY 4/8	10GY 4/8	5G 4/10	10G 4/10	5BG 4/8	10BG 4/6	5B 4/10	10B 4/10	5PB 4/12	10PB 4/12	5P 4/12	10P 4/12	5RP 4/12	10RP 4/14
HTML code	#737373	#B9142C	#A9300D	#8B4815	#7E4F00	#6C5710	#5F5B0D	#4C601A	#1C6823	#126647	#2D6255	#28625E	#276168	#2D5F6F	#235E80	#1A5A9F	#5D4AA5	#7C3F96	#913583	#A22A67	#B6114D
Cell	D0	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	D11	D12	D13	D14	D15	D16	D17	D18	D19	D20
Munsell code	N2	5R 2/8	10R 2/6	5YR 2/4	10YR 2/2	5Y 2/2	10Y 2/2	5GY 2/2	10GY 2/4	5G 2/6	10G 2/6	5BG 2/6	10BG 2/6	5B 2/6	10B 2/6	5PB 2/8	10PB 2/10	5P 2/8	10P 2/6	5RP 2/8	10RP 2/8
HTML code	#333333	#5A091F	#4F1814	#422111	#34271B	#302919	#2B2A1B	#272C1F	#15301A	#0C3022	#083028	#1B2D2C	#1A2D30	#1B2C33	#0A2D42	#0C2A51	#321B62	#40194E	#421C3E	#520E39	#570B2E

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