Progress in Colour Studies

Volume I. Language and culture

Edited by C.P. Biggam
and C.J. Kay

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Progress in Colour Studies I

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PREFACE

When Prof. Christian Kay and I decided to organize a conference on colour, one desideratum was foremost in our minds: we wanted to have representations from all those disciplines in the humanities and social sciences (broadly interpreted) which had already tackled this subject. Any colour researcher, whether linguist, psychologist, anthropologist, artist or other specialist, soon discovers that progress is limited without a multidisciplinary approach, but how can any one researcher have a grasp of the ever-changing cutting-edge research of many other specialists? We felt that it would be immensely helpful to ask contributors to the conference to give a flavour of what was happening in their own disciplines, either by offering a general overview of the latest theories, or by presenting an example project illustrating their research methodology. We were delighted at the interest shown in the proposal, at the amazingly broad spread of subjects that was offered, at the number of nationalities represented at the conference, and at the quality of the papers presented.

The conference, entitled 'Progress in Colour Studies 2004' (PICS04), was held in the University of Glasgow from 30th June to the 2nd July 2004, and the event proved to be both academically stimulating and extremely convivial. The greatest sadness was that one of the speakers, Robert MacLaury, a towering and long-standing name in the linguistics and anthropology of colour studies, died not long before we gathered in Glasgow. It was immediately decided that the conference should be dedicated to his memory, as are the resulting volumes, and we would like to offer our grateful thanks and heartfelt sympathy to María MacLaury, who not only gave permission for these dedications, but attended the conference in person.

The study of colour semantics suffered another loss not long after our meeting, when the erudite and gentlemanly Robert Edgeworth, who gave a witty paper at the conference, sadly died soon after returning home to the U.S.A.

The publication of the majority of the conference papers has been a lengthy task, but we hope readers will agree that they make a valuable contribution to our understanding of this most intriguing of subjects. We are grateful to our

publisher, John Benjamins, for agreeing to a two-volume work, roughly divided into linguistic and psychological contributions. Dr Nikki Pitchford, who organized a highly successful psychology session at the conference, agreed to join Prof. Kay and myself in editing the papers for publication. She has had principal editing responsibility for *Progress in Colour Studies 2: Psychological Aspects*.

In this first volume, the editors are proud to present some fascinating papers which include new approaches to the problems of studying colour, both linguistic and philosophical, as well as investigations into the intricacies of the colour systems of several individual languages, both living and historical. Methodological papers include introductions or reviews of approaches such as Natural Semantic Metalanguage (Wierzbicka), social network analysis (MacKeigan & Muth), quantitative linguistic analysis (Pawłowski), type modification (Steinvall), vantage theory (Głaz), the centrality of social norms of inference (Saunders), and the contributions of code-switching (Biggam), place-name studies (Hough), and heraldry (Huxtable) to the historical study of colour. Illustrating the practical workings of these approaches, or simply presenting new or recent research, the volume also makes major contributions to our knowledge of the colour systems of the following languages: Burarra (Wierzbicka); English (Old, Middle, and Modern) (Biggam, Hough, Steinvall); French (Modern and Anglo-Norman) (Forbes, Biggam); Gaelic (Cape Breton) (Lazar-Meyn); Portuguese (European) (Correia); Sorbian (Upper and Lower) (Hippisley & Davies); and Tzotzil (MacKeigan & Muth). Who could fail to find something of interest here?

Finally, the conference organizers would like to thank all those who contributed towards the smooth running of the event. Their work is much appreciated:

Marc Alexander, Kathryn Allan, Jean Anderson, Andra Bean, Dave Beavan, William Biggam, Ellen Bramwell, Jane Duncan, Flora Edmonds, Ian Hamilton, Jim McGonigal and Catherine Mulvenna. We would also like to thank the reviewers of the papers for their helpful suggestions, and our editor at Benjamins, Anke de Looper. A more general, but no less heartfelt thank-you is also due to the Institute for the Historical Study of Language at the University of Glasgow. For financial help with the conference, the organizers would like to thank the University of Glasgow and the Linguistics Association of Great Britain.

C. P. Biggam
August 2006

DR ROBERT E. MACLAURY 1944-2004
AN APPRECIATION

TERRI MACKEIGAN & CHRIS SINHA
University of Edinburgh & University of Portsmouth

Dr Robert E. MacLaury died on February 18, 2004. Rob was a scientist and scholar of huge stature, enormous originality and breathtaking productivity. He began his academic life as an anthropologist, doing fieldwork in Oaxaca State, Mexico, where he carried out an exhaustive study of the phonology, grammar and semantics of Zapotec languages. Amongst the many publications resulting from this work was his seminal 1989 paper on the semantics of Zapotec body-part locative terms. He gained his Ph.D from the University of California, Berkeley in 1986. Rob became involved in the World Color Survey, based in Berkeley, and was himself responsible for the Meso-American Color Survey, culminating in his book *Color and Cognition in Mesoamerica: Constructing Categories as Vantages*, published in 1997. Rob's involvement in research in colour perception and language was not confined to Central America, but also encompassed work in Africa, Canada, New Zealand and the American North and Southwest. It was his colour research that provided the spur for the theoretical work that occupied the last few years of his life. Rob MacLaury's name will always be associated with Vantage Theory, an approach to categorization that significantly extended prototype theory by incorporating, as its name suggests, speaker vantage point, entrenched in the semantics of particular languages, into the process of human categorical perception.

It is for his kindness and humanity that we shall most remember Rob. We, and many others, benefited from the unstinting generosity with which he shared his time and his encyclopaedic knowledge with colleagues and students. Rob was not one of those who viewed scientific knowledge as primarily a vehicle for professional advancement, and we often felt that he did not receive the kind of recognition that his work deserved. During the last years of his life, Rob was immensely productive. Perhaps he sensed that he had only a little time in which to complete his life's work. Now Rob is no longer with us, but it is our profound hope that others, beside ourselves, will

read his publications, be inspired, and develop the rich inheritance he has left behind him. Rob lives on, like all great intellectuals, in his work. In person, we shall miss him very much.

References

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ABBREVIATIONS

AN	Anglo-Norman
BCT	Basic Colour Term
BML	British Medieval Latin
Cz.	Czech
EME	Early Middle English
ENE	Early Modern English
Eng.	English
Lat.	Latin
LME	Late Middle English
ME	Middle English
NE	New / Modern English
NF	Norman French
OE	Old English
OF	Old French
ON	Old Norse
OSc.	Older Scots
PDE	Present Day English
Pol.	Polish
Por.	Portuguese
Rus.	Russian
Sc.	Scots
ScG.	Scots Gaelic
Sp.	Spanish
Uk.	Ukrainian

County names:

Berks. - Berkshire
Berwicks. - Berwickshire
Bucks. - Buckinghamshire
Ches. - Cheshire
Derbys. - Derbyshire
Herefs. - Herefordshire
Norf. - Norfolk
Som. - Somerset
Wilts. - Wiltshire
Yorks. - Yorkshire

THE SEMANTICS OF COLOUR
A NEW PARADIGM

ANNA WIERZBICKA
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1. *From 'colour' semantics to 'visual' semantics*

Overwhelming linguistic evidence shows that 'colour' is not a universal human concept.[1, 2] Yet, as many recent publications vividly illustrate, the whole field of visual semantics is still largely framed in terms of 'colour': 'colour' is its cornerstone and the validity of this notion as an analytical tool continues to be taken for granted. For example, Hardin's article entitled "Explaining basic colour categories" opens as follows: "There are indeed many properties of colour categories that are functions of language and culture. But to claim that none of the significant ones are biologically based, as some cultural relativists do, seems to me to fly in the face of the facts" (Hardin 2005:72). Thus, for Hardin the only question is this: *which* of the colour categories are biologically rather than culturally and linguistically based? He does not even consider the possibility that not only certain properties of colour categories, but also the very concept of 'colour' may be a function of language and culture.

Few scholars, no matter how devoted to the pursuit of universals, would wish to argue that 'nirvana', 'jihad' or 'kamikaze' are universal human concepts. To most, it would seem obvious that these concepts are bound to

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[1] Many ideas discussed in this paper took shape in the course of extensive discussions with Cliff Goddard to whom I am very grateful. I would also like to express my gratitude to Istvan Kecskes and Ferenc Kiefer for their comments on the Hungarian words *piros* and *vörös*. The information from the Magyar Nemzeti Szövegtár is due to Istvas Kecskes. For the information on Burarra, thanks are due to Margaret Carew and Les Hiatt.

[2] The word *colour* is used in this paper in its present-day English popular sense. It is not used in its more technical sense as a superordinate term for the various aspects of colour, such as *hue*, *brightness* and *saturation*. (Present-day English *colour* is almost exclusively concerned with hue.) Furthermore, it is an NSM (Natural Semantic Metalanguage) convention to use small capitals for *universal* semantic primes. Elsewhere in this book, small capitals are used for semantic concepts in general [editorial note].

particular languages, and therefore belong, essentially, to the cultures and conceptual systems associated with these languages. When it comes to words like *blue*, *red*, and in particular *colour*, however, scholars who are native speakers of English often simply assume that these must stand for universal human concepts and that the absence of semantic equivalents in many other languages of the world is simply irrelevant. The universality of 'colour' seems to them as obvious as the non-universality of 'nirvana', 'jihad', or 'kamikaze'.

It has often been pointed out that there are many languages, for example in Australia, Papua New Guinea and Africa, which do not have a word for 'colour'. On the face of it, therefore, 'colour' is not a universal concept. It is a very important concept in English, and of course in many other languages, but by no means in all. This being so, the idea of 'colour universals' – conceived of as universals of language and thought – is self-contradictory. There can be no universals in how people think and talk about colour given that in many languages people do not talk about colour at all.

This basic point – which I have been making for more than two decades (cf. Wierzbicka 1980, 1990, 1996) – has often been rejected on the basis of the argument that the absence of a word does not prove the absence of a concept. Thus, if English happens to have a word for 'colour' and, for example, the Papuan language Kalam (also known as Karam) does not – this supposedly does not prove that 'colour' is not just as real in the thinking of the Kalam people as it is in the thinking of the speakers of English.

The same argument has been made for many other putative human universals, for which there 'happen' to be words in English though not in some other languages – in particular, many so-called 'basic human emotions', such as 'sadness' (for which Tahitian, for example, has no word at all; cf. Levy 1973). Such an insouciant attitude to lexical data from different languages implies that English is (as Crystal (2003:15) says ironically) "the fittest" language of all, or, as van Brakel (1993:108), puts it, "the pinnacle of the evolution of naming the structure of the experiential world": a language which 'happens' to have words for everything fundamental in human thought and experience (cf. Wierzbicka 2006).

Berlin and Kay (1969) did not claim that all languages have words matching English words like *red*, *blue* and *green*; and their claim that they all have words like *black* and *white* was later revised and rephrased. Nonetheless, the whole Berlin and Kay (henceforth 'B&K') paradigm is based on the assumption that all languages can be legitimately described and compared in terms of such English words; and that some linguistic and conceptual universals, too, can be captured in such terms. For example, when Kay, Berlin,

Maffi and Merrifield (1997) describe the meaning of the word *miji-miji* "blood-blood" in the Australian language Martu Wangka as "W/R/Y" they are clearly imposing on this language English conceptual categories. The fact that English categories are disguised by the use of abbreviations (W instead of *white*, R instead of *red*, and Y instead of *yellow*) does not make the description any less anglocentric: evidence suggests that Martu Wangka itself has no concept of 'white', no concept of 'red', and no concept of 'yellow' (I will return to this point shortly).

It is true that the absence of a word does not prove the absence of a concept; but how does one prove the *presence* of a concept for which there is no word? And if we want to search for human universals in an unbiased way should we not try to rely, in the first place, on concepts which are lexically recognized in all languages, rather than those which happen to be lexicalized in English?

The empirical work undertaken within the NSM (Natural Semantic Metalanguage) theory of language and thought (see below) has shown that, while many languages do not have a word for 'colour', all languages have a word for 'seeing'. For example, in all languages one can say things like: "I don't see anything" or "I see many people". As my colleague Cliff Goddard and I have argued for many years, therefore, it makes sense to ask about the universals of seeing rather than any putative 'universals of colour'. It makes sense to ask how people in different cultures talk and think about what they see – rather than ask about how they talk and think about 'colour'. Of course, it is also interesting and worthwhile to study how people talk about *colours* – but only in those languages, like English, in which they do in fact talk about colours.

The question about *visual* semantics is a wider and more fundamental one than the question about the semantics of colour, and to explore fruitfully the semantics of colour (with respect to languages like English) we need to explore it in the context of that wider and more fundamental inquiry – an inquiry into the semantics of seeing. The basic point to bear in mind is that, in many languages, one cannot ask the question "What colour is it?" So it must be assumed that this question does not arise in the speakers' minds. Studying the visual lexicon of those languages, we can discover what questions do arise in the speakers' minds and how *they* think about the visible world.

In her "Report on colour-term research in five Aboriginal languages", Hargrave (1982:208) writes: "Jones and Meehan, carrying out an investigation of Anbarra (north-central Arnhem Land, Australia) colour concepts, concluded that there were only two real colour terms, those for light and dark". In my

view, the research carried out by Jones and Meehan shows that there are no real 'colour terms' in Burarra (as the language is now called): first, since the language has no word for 'colour' there is no reason to assume that the two words glossed by Hargrave as "light" and "dark" are 'colour terms', that is that they include in their meaning the concept 'colour'; and second, Jones and Meehan's observations on the use of these words show clearly that they are not colour terms at all. In fact, Jones and Meehan's careful study of the use of the two words in question (*-gungundja* and *-gungaltja*) provides extremely valuable insight into the visual semantics of Burarra, and of many other languages which do not have a word for 'colour' and which, according to the B&K paradigm, represent the initial stage of the 'evolutionary sequence'. I will return to these observations in Section 5.

Similarly, in his analysis of 'colour categories' in Karam (Papua New Guinea), Bulmer (1968) concludes that "there are 14 or 15 colour categories". At the same time he notes that Karam has no word for 'colour'. In my view, Bulmer's data and observations show that, while Karam has a rich vocabulary of visual descriptors, it has no colour categories and no colour domain at all. The fact that English has a colour domain and many colour categories does not mean that it is justified to posit such a domain and such categories for all other languages; or that it is justified to analyze the visual descriptors of all languages through a conceptual grid applicable to English and psychologically real for the speakers of English. The fact that (as Bulmer notes) Karam visual descriptors do not separate colour from other properties shows that these descriptors are not colour terms and that they do not include in their meaning the concept 'colour'.

Ultimately, imposing on other languages and cultures one's own conceptual grid is not a crime. If that is what one wants to do, arguably, one is entitled to do it. But others are entitled to try to see the world from other perspectives. In particular, they are entitled to pursue the old anthropological search for "the native's point of view" (Malinowski 1922; Geertz 1975).

The structure of the experiential world differs, to some extent, from language to language. There are many different experiential worlds, and, if we try to explore them through shared human concepts rather than through English alone, we can get closer to the experiential worlds inhabited by the speakers of languages other than English. The fact that we may never be able to capture those worlds fully or perfectly is not a good reason not to try to get as close to them as possible.

2. *'Semantic atoms' and 'semantic molecules'*

The work carried out over three decades in the NSM framework shows that

all human languages share sixty or so 'semantic primitives' – elementary units of meaning out of which all complex and culture-specific meanings are built. The set of such universal 'semantic atoms', lexicalized in all languages of the world, includes SEE and HEAR, as well as THINK, KNOW, WANT and FEEL. The full set of empirically established 'semantic atoms' (universal human concepts) is given in the table below. Together with their combinatory properties, these concepts can serve as a 'Natural Semantic Metalanguage' (NSM) for cross-linguistic comparisons and for the search for linguistic and conceptual universals.

Substantives*	I, YOU, SOMEONE (PERSON), SOMETHING (THING), PEOPLE, BODY
Determiners	THIS, THE SAME, OTHER
Quantifiers	ONE, TWO, SOME, MANY/MUCH, ALL
Attributes	GOOD, BAD, BIG, SMALL
Mental predicates	THINK, KNOW, WANT, FEEL, SEE, HEAR
Speech	SAY, WORDS, TRUE
Actions, events, movement	DO, HAPPEN, MOVE
Existence and possession	THERE IS, HAVE
Life and death	LIVE, DIE
Logical concepts	NOT, MAYBE, CAN, BECAUSE, IF
Time	WHEN (TIME), NOW, AFTER, BEFORE, A LONG TIME, A SHORT TIME, FOR SOME TIME, MOMENT
Space	WHERE (PLACE), HERE, ABOVE, BELOW, FAR, NEAR, SIDE, INSIDE, TOUCHING (CONTACT)
Intensifier, augmentor	VERY, MORE
Taxonomy, partonomy	KIND OF, PART OF
Similarity	LIKE (HOW, AS)

* Exponents of primes may be words, bound morphemes, or phrasemes; they can be formally, that is, morphologically, complex; they can have different morphosyntactic properties (including word-class) in different languages; they can have combinatorial variants (allolexes); each semantic prime has a well-specified set of grammatical (combinatorial) properties.

Table 1: *Universal human concepts. English version (cf. Goddard & Wierzbicka 2002)*

On the basis of the 'atoms' listed above, different systems of language and thought build certain 'semantic molecules', which may play an important role in the construction of many other more complex meanings. For example, 'tree'

is an important semantic molecule in English. It underlies the meaning of English words like *oak*, *birch* and *pine*. Similarly, 'bird' is an important molecule which underlies the meaning of English words like *sparrow*, *swallow* and *parrot*. Both 'tree' and 'bird' play a role not only in English but also in many other languages. But they are not universal. For example, there is no word for 'tree' (as distinct from 'bush' or 'shrub') and no word for 'bird' (as distinct from 'bat' or 'butterfly') in many Australian languages. There is no reason to assume that these concepts, which are important in English, play a role in the conceptual systems of the languages which have no word for them. (Heath 1978; cf. also Goddard 1996).

The same applies to 'colour'. 'Colour' is an important semantic molecule in English, as it is in many other languages, and it underlies (and is a part of) the meaning of words like *blue*, *red*, *yellow* or *pink*. But if we want to compare the visual semantics of English with that of languages which do not have a word for 'colour', we can only use SEE, not 'colour', as our *tertium comparationis*, because it is SEE, not 'colour', that all languages share. (For a full explication of 'colour' see Wierzbicka, in press.)[3]

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[3] Van Brakel (2002:151) refers approvingly to my earlier discussion rejecting 'colour' and so-called 'basic colours' ('white', 'black', 'red' and others) as analytical tools and supposed universals of human cognition, but then he proceeds to criticize me for treating SEEing differently, and regarding it as a genuine lexical universal. Rejecting the view that some lexicalized and semantic universals do exist, van Brakel says that "a staunch defender of this view can be found in Wierzbicka", and he goes on to argue as follows: "She [Wierzbicka] argues that TO SEE and a few more 'basics' are universal semantic primitives. But to take TO SEE as a primitive is to repeat at a more abstract level the same mistake she so eloquently exposes for COLOUR and BASIC COLOURS. Opposing her view is not an argument against the capacity of 'seeing' in the flow of life, but against the semantic primitive TO SEE. To argue that TO SEE is a semantic primitive is still 'to give twentieth century English a privileged position' (Wierzbicka 1999.)"

Why does van Brakel claim that neither SEE nor any other concept can be a true lexicalized or lexico-grammatical universal? Essentially, because he does not believe that there is a way to establish that some concepts really match across language boundaries, and also because he thinks that it is easy to mistake near-equivalents for exact equivalents. There can be no quarrel with van Brakel's statement that "fundamental dangers lie in the easy assumption that semantic primitives exist", but it is hard to see how this statement applies to decades of painstaking empirical investigations by a team of scholars doing their best to find counter-examples against their own working hypotheses and revising these hypotheses whenever such counter-examples have been found.

Van Brakel's own work attacking the fallacies of so-called 'basic colour terms' and so-called 'basic human emotions' has contributed significantly to the exposure of spurious universals in both these areas. But his onslaught on the concept of SEE and, above all, his *a priori* rejection of the possibility of genuine universals, undermines his own achievement and

3. *Describing 'qualia': two myths*

The question of the link between concepts and words is so important, and so controversial, that it requires more discussion – in particular, in relation to people's sensory experiences. How can people describe their experience to others? How can they tell others what they see, hear and feel – and how can they make themselves understood?

There are two persistent myths regarding this issue, often linked in the philosophical literature with the word *qualia*, which refers to purely 'qualitative' experience. One myth is that qualitative experience cannot be described at all. For example, John Locke (1959 [1690]) argued that one cannot explain to a blind person what the colour red (or scarlet) looks like. The other myth is that qualitative experiences of this kind can be described adequately in some non-verbal way, that is without words – for example, by means of diagrams, pictorial representations, mathematical equations or scientific symbols of one kind or another.

In my view, both these myths are just that: myths. One *can* explain to a blind person what a particular colour looks like, or to a deaf person what a particular sound sounds like. The fact that Helen Keller was perfectly able to learn the meanings of words like *red* or *rustling* (Keller 1909) shows that the meanings of such words can be explained to people who cannot have the visual or aural experiences that seeing and hearing people associate with them. At the same time, it is obvious that the meaning of such words could not have been explained to someone like Helen Keller by means of some pictorial representations (which she could not see) or by means of mathematical equations or other scientific symbols or devices (which she, like most people not trained in mathematics, could probably not understand).

So how could one explain to someone like Helen Keller what, for example, the word *rustling* means? In my view, one could do it by means of a paraphrase in ordinary language relying on some other words whose meaning this person already understands. For example, one could say that a rustling noise is like the noise of leaves touching one another and moving in the wind. Such a description would not enable a deaf person to hear a rustling noise in his or her head, but it would explain to them what the word *rustling* means and would give them a valuable insight into the experience of hearing people and their ways of conceptualizing that experience.

What applies to sounds also applies to appearances. One can explain to a

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plays into the hands of those who are contented, or resigned, to fall back on English as their one and only analytical metalanguage.

blind person that the word *gold* (as in *gold hair*) means, roughly, looking like the metal gold. This would not enable the blind person to see gold hair, but it would give them a valuable insight into the experience of seeing people and their ways of conceptualizing that experience.

As I will argue in this paper, what applies to words like *gold* applies also to words like *blue* and *red*. This is not to say that the semantic (conceptual) structure of *blue* and *red* is the same as that of *gold*. *Blue* refers to the sky and *red* to blood at a further remove than *gold* does to gold. Ultimately, however, the only way to describe to a blind person what the English words *blue* and *red* mean is with a reference to a prototype such as the sky and blood. There is simply no other way. No one could claim seriously that one could explain it by means of neurophysiology or physics: one can only explain things to people in terms of something that they already understand, not in terms of something that they do not understand at all. Neurophysiology or physics may explain how people see colours, but not what they mean by the words *red* and *blue*.

Anybody who uses words like *rustling*, *gold*, *blue* and *red* understands (at some level) what these words mean, and relies on that meaning to convey their thoughts to other people. What they convey to other people are the thoughts, not experiences themselves. One cannot convey one's visual or aural experiences to another person, whether seeing or blind, whether hearing or deaf, but one can convey one's thoughts; and these thoughts are not couched in terms of acoustics or chromatology. Rather, linguistic evidence suggests that they are couched in terms of a likeness of the visual or aural experience to some other experience which is not purely visual or aural, and which is thought of as shared by other people. For example, when I hear a rustling noise, I can think about it like this: "this is like what people hear when they hear leaves moving in the wind and touching one another".

The experience which serves as a model for describing my aural experience of rustling is not purely aural, because it includes some knowledge of the situation – knowledge which can be put into words and which does not rely on hearing. (For example, one can learn a great deal about leaves in general, and about leaves moving in the wind in particular, by touch.) Similarly, when I say that I see gold hair, I mean by it (roughly speaking) that what I see "looks like gold", that is that "this is like what people see when they see the metal gold". Again, the experience which serves as a model for describing my experience of 'goldness' or 'blueness' is not purely visual but includes some knowledge about the source of the visual impression: that it is due to the metal called 'gold', or to the vast expanse visible above everything else and called 'the sky'. (Again, one can learn something about the metal gold, and even about the sky, if one is

blind; and one can know that *gold* means "looking like the metal gold" even if one has never seen that metal.)

4. *Explicating 'abstract' colour terms:* red, piros *and* vörös

Having explicated 'colour' (see Wierzbicka, in press), we can now explicate the meaning of English colour words like *red* and *blue*, and thus prepare the ground for comparing English with other languages which also have a word for 'colour'. In this paper I will focus on *red*.

I would argue that the English word *red* is thought of as a name of a particular colour, and that the meaning of the word *colour* is included in that of the word *red*, as a semantic molecule. Accordingly, in the explication of *red* given below I will specify only the additional semantic components distinguishing 'the colour red' from 'other colours' and from the concept of 'colour' as such. This can be done as follows:

X is *red* =
a. people can think about X's colour$_{[M]}$ like this:
b. "it is like the colour$_{[M]}$ of blood$_{[M]}$"
c. at the same time, they can think about it like this:
d. "sometimes people can see something like this when they see fire$_{[M]}$"

The assumption behind this explication is that the concept of 'red' is based on two prototypes: blood and fire. It does not imply sameness of colour (along the lines of 'the colour of X is the same as the colour of blood' or 'the colour of X is the same as the colour of fire'). In fact, speakers of English often point out that, while they would indeed describe blood as red, red is not always 'blood-red'; and many say that they would not describe fire as red but rather as orange, or as a mixture of orange, yellow and red. But the explication proposed here does not claim that *red* is the same as *blood-red* or that fire is red. It only claims that there are conceptual links between 'red' and 'blood', as well as between 'red' and 'fire' (in each case, links of a different type); and that these links have something to do with what people see when they see blood and what they may sometimes see when they see fire (red coals, red 'tongues' of fire, red haze).

The nature of the conceptual link between 'red' and 'fire' is different from that of the link between 'red' and 'blood'. The link between 'red' and 'blood' is based on the assumption that the colour of things called *red* is like the colour of blood. The association between 'red' and 'fire' is not based on the assumption that fire is inherently red in colour. Yet, as expressions like *red coals*, *red-hot* and *fiery red* (defined by the *OED* (1989) as "looking like fire, blazing red")

testify, speakers of English are aware that, when there is fire in a place, people can sometimes see something red in that place; and the redness of burning coals, burning wood, or 'red-hot' metal is so salient that it appears to live in the cultural memory of the speakers of English even in an epoch when many of them have little first-hand contact with fire.

Furthermore, the 'redness' of burning coals or wood or red-hot metal is associated with heat and light (as well as with danger), and this association appears to live on in the age of electrical appliances and technologically produced red lights (for example, the red lights of cars and bicycles at night, as well as traffic lights). The wires of an electric toaster which is switched on appear to be 'red', not only because they can be seen as similar in appearance to blood, but also because they are reminiscent of fire: a source of fire-like light, heat, and danger. To put it another way, when things are 'red-hot', they are hot like fire, they glow like fire, and they combine redness, heat, and glow like burning coals.

'Red' is often described in English as a 'warm' colour. The conceptual link with fire would explain that. It is also commonly associated with danger (and used, accordingly, in traffic light systems, and so on). Blood is visually less salient than fire but it is also highly noticeable (in comparison with any other bodily fluids and substances, such as saliva, excrement, urine, and so on). It is also something that may be a natural signal of danger – something that people need to pay attention to, as they need to pay attention to fire. From the point of view of human evolution, close attention to fire and to blood makes a lot of sense, and it is not surprising that both these things feature prominently in the visual semantics of the world's languages. It would be hard to deny that both fire and blood are also important in the life of speakers of English, and that they are both associated with redness (despite the fact that blood can be black, and flames, yellow or orange).

This does not mean that all languages have a word for 'red'. It does appear, however, that very many (perhaps most) languages have words referring in their meaning to blood and to fire. This conceptual link between visual descriptors and blood and fire can take different forms in different languages. In English, the descriptor *red* involves the semantic molecule 'colour'; in many other languages, it does not.

The English concept of 'red' has close equivalents in many other languages and so it may appear to be independent of language and 'hard-wired'. It is not: as Berlin and Kay (1969) acknowledged themselves, Hungarian, for example, has two 'basic' words, *piros* and *vörös*, corresponding to the English word *red*, both overlapping with *red*, but also different from it in meaning.

To compare the meanings of *red*, *piros*, and *vörös* we need a common measure. Universal semantic primes like SEE and PEOPLE, combined with semantic molecules like 'blood' and 'fire', which are derived from common human experience, provide such a common measure. Linguistic evidence, including morphology and common collocations, shows that this common measure is psychologically plausible. For example, in the B&K tradition, the meanings of *piros* and *vörös* are identified as either 'red_1' and 'red_2' or as 'light red' and 'dark red'. Since Hungarian has no word matching the English *red*, such descriptions could not be translated into Hungarian itself. They reflect an anglophone perspective, which is presented as a neutral and objective one, with the English word *red* being used as a universal standard.

Kay and Berlin (1997) emphatically rejected the suggestion that in *Basic Color Terms* American English colour words were used as standard. Nonetheless, Kay (2004) has explicitly proposed that the English word *red* should be taken as a semantic primitive and that the Hungarian words *piros* and *vörös* should be defined through the English *red*. Arguing specifically against the NSM approach to visual semantics, Kay writes (with reference to the Polish and Russian words "for blue" as well as the Hungarian words "for red"):

> All the NSM analyst needs to do is take the phenomenally basic colours: black, white, red, yellow, green and blue [that is, the English colour words, A.W.] as primitives and define other colour words such as words for pink and light blue (Russian *goluboj*, Polish *niebieski*) or light red (but darker than pink = Hungarian *piros*) in terms of these. (Kay 2004:242)

Using the English words as primes seems to Kay to be the obvious thing to do:

> Assuming that the meaning of colour words *must* be based on some non-colour prototypes W [Wierzbicka] makes a plausible case of her particular choices, but the argument rests entirely on the supposition that *red*, *green*, *yellow* and *blue* cannot simply mean 'red', 'green', 'yellow' and 'blue' at the perceptual and conceptual level. (Kay 2004:243)

The extreme anglocentrism of Kay's view, according to which English words neatly capture human conceptual primes inexpressible in Polish, Russian and Hungarian, should be obvious.

From a Hungarian perspective, both *piros* and *vörös* appear to be related, conceptually, to blood: *vörös* comes from *vér* "blood" and *piros* from *pir* "blush". According to the *Magyar Nemzeti Szövegtár* (Hungarian National Text Collection), the most frequent collocations with *piros* include *piros lap* "red card" (in soccer), *piros rózsa* "red rose" (usually a sign of love) and *piros tojás*

"red egg" (this is what girls give boys during Easter, when the boys go to visit them). The most common collocations with *vörös* include *vörös csillag* "red star" (Communist symbol), *vörös zászlo* "red flag" (the flag of the USSR, a Communist symbol), *vörös bor* "red wine", *vörös ördög* "red devil" and *vörös rózsa* "red rose" (a sign of trouble).

The use of *vörös* as a symbol of Communism suggests that *vörös* is associated with blood *spilled*, not blood in a person's veins. The Communist red flag was originally a symbol of revolution, and it evoked blood spilled in struggle. On the other hand, the use of *piros* as a symbol of love evokes the image of a loving heart (*piros sziv*). The morphological connection between *piros* and *pir* "blush" confirms the association between *piros* and the blood inside the (living) human body, rather than blood shed. The common collocations *piros arc* "red face" and *piros sziv* "red heart" point in the same direction.

Across cultures, blood can be a symbol of life (as in Biblical Hebrew culture) and it can also be a symbol of violent death: martyrdom (as in the Catholic Church), killing (consider *bloody*, *bloodbath*, *bloodthirsty*, and others), revolutionary struggle (as in Communist countries), and so on. In Hungarian, *piros* seems to be clearly associated with *blood* inside the body, that is the 'blood of life', whereas *vörös* is associated with blood spilled, that is, potentially, the 'blood of trouble', the 'blood of bloodshed'. The fact that after a while, blood spilled tends to get darker could explain the inclusion of darker shades in *vörös*.

It is true that *vörös*, too, can be used to describe a person's face. In contrast to *piros arc*, however, *vörös arc* has negative connotations. While a *piros arc* could be the result of wind or running, a *vörös arc* is likely to be the result of shame or anger. Thus there is something 'abnormal' or unhealthy about a face whose colour is described as *vörös*. The explication proposed here is consistent with this: a *vörös arc* is a face whose colour is 'like the colour of blood which has been for some time outside a person's body' – not a very flattering description, but surely a coherent one.

My hypothesis, then, is that *piros* is thought of as the colour of blood inside a person's body (visible sometimes in an open wound and in a person's 'red' face), whereas *vörös* is thought of as the colour of blood which is, and perhaps has been for some time, outside a person's body. At the same time, both *piros* and *vörös* are, like the English *red*, associated with fire – a conceptual link confirmed by collocations like *vörös izzás* "red heat", *vörös láng* "red flame" and *tüzpiros* (as well as *tüzvörös*) "fiery red" (Országh 1960).

Accordingly, I propose the following explications:

X is *piros* =
a. people can think about X's colour$_{[M]}$ like this:
b. "it is like the colour$_{[M]}$ of blood$_{[M]}$ inside a person's body"
c. at the same time, they can think about it like this:
d. "sometimes people can see something like this when they see fire$_{[M]}$"

X is *vörös* =
a. people can think about X's colour$_{[M]}$ like this:
b. "it is like the colour$_{[M]}$ of blood$_{[M]}$ when it has not been inside a person's body for some time"
c. at the same time, they can think about it like this:
d. "sometimes people can see something like this when they see fire$_{[M]}$"

Crucially, in contrast with expressions like 'light red' and 'dark red', the explications proposed here are corroborated by language-internal evidence and can be translated, literally, into Hungarian. At the very least, therefore, they constitute plausible hypotheses about the Hungarian "native's point of view".

5. *Languages with no colour terms: an illustration*

As mentioned earlier, 'colour' is an important semantic molecule in English, as it is in many other languages which have a word corresponding to the English word *colour*. There is no such molecule, however, in languages which have no word for 'colour'.

Let us consider, for example, the two words from the Australian language Burarra which were mentioned earlier. The referential range of these words has been described by Jones and Meehan (1978:27) as follows: "*-gungaltja*: refers to light, brilliant and white colours, and also to highly saturated red; -g*ungundja*: refers to all other colours, namely dark, dull, and black colours".

The researchers have also stressed that *-gungaltja* requires "a touch of brilliance and animation as well as a high degree of brightness"; and they have noted a spontaneous use of the two words side by side in a Burarra speaker's comments about the sea on a moonlit night, oscillating between 'black' and 'silver': "*gun-gungundja – gun-gungaltja*; *gun-gungundja – gun-gungaltja*".

Jones and Meehan keep using the word *colour* in relation to the words *-gungaltja* and *-gungundja*, but in fact their own observations show that the distinction is not based on colour at all. Rather, it is based on factors like brightness and lightness, or on what they themselves have called "brilliance and animation".

Jones and Meehan's account of how the data on the supposed 'basic colour terms' in Burarra were collected dramatizes this point in a spectacular way:

> At first, Gurmanamana (the informant) said there were no *-gungaltja* colours there at all and pointed from the [Munsell] chart to a piece of reflective foil used for cooking, lying on a bench in the tent. 'That one here, properly number one *gun-gungaltja*, no more this mob.' Having made his protest, Gurmanamana then proceeded to outline the approximate boundary of the *-gungaltja* colours as shown in Fig. 2 [not reproduced here]. It can be seen that only about 10% of colour chips are included in this category, the main bulk of the chart belonging to the *-gungundja* class (1978:27).

Looking at Figure 2 mentioned in the quote, and ignoring the two pockets of red, one could conclude that the two words mean, roughly, "light" and "dark" – terms with which B&K's original 'black' and 'white' have often been replaced. As we have seen, however, the contrast between *-gungaltja* and *-gungundja* is linked not only with 'lightness' versus 'darkness' but also with the presence or absence of 'bright redness'. From a Burarra point of view, 'lightness' and 'bright redness' go together, as aspects of a unitary concept which does not separate colour from light. We have also seen that at first the informant described *all* the chips in the Munsell set, *including the white one*, as *-gungundja*, so that *-gungundja* cannot really mean "dark".

The Burarra dictionary compiled by Kathleen Glasgow (1994) defines the two words in question (given there in a different spelling) as follows: *-gungaltja*, "being white or warm-coloured; clean (as of clothes)"; *-gungundja*, "being black; grey; cool-coloured". These definitions are of course useful guides to the two words' range of use, but they are clearly not attempts to capture their meaning from the "native's point of view". Burarra has no concept of 'white' and no concept of 'a warm colour'; and it has no concept of 'black', no concept of 'grey', and no concept of 'a cool colour'. The definitions provide English translations, based on English concepts, which have no counterparts in Burarra itself.

As I see it, to formulate a viable hypothesis about the meanings of these words we must identify a set of conceptual components which will account accurately for each word's range of use. At the same time, we need to look for a common factor linking the different components. Finally, we need to formulate the semantic components that we posit as constituting a given word's meaning in words which would be readily translatable into Burarra itself. To try to describe the meaning of Burarra words through English words and phrases which have no equivalents in Burarra would be to impose on the Burarra people English ways of thinking rather than trying to elucidate their own.

So here is a hypothesis, phrased here in English and in Wierzbicka (in

press) in Burarra itself:

X is *-gungaltja* =
a. some things are like this:
b. when people see a place where these things are they can always see these things
c. the sun$_{[M]}$ is always like this
d. fire$_{[M]}$ is always like this
e. at some times, blood$_{[M]}$ is like this
f. X is like this

The relevance of the sun to the concept expressed by *-gungaltja* is supported by the comment of the informant (Gurmanamana) quoted earlier. The relevance of fire is made plausible by the use of the expression *wirdidj ngak-rnungu* "flame-like" in reference to bright red and yellow colours in the related language Kumberlang with an analogous set of visual descriptors (Carolyn Coleman, personal communication). The relevance of blood is supported by the fact that in many other Australian languages, including Martu Wangka, to which I will come back shortly, the word corresponding semantically to *-gungaltja* means, literally, "blood-blood" (see below).

The link between *-gungaltja* and bright light is accounted for in terms of a conceptual link with the sun. Its link with bright redness is accounted for by positing a conceptual link with blood. The two seemingly disparate reference points – bright light (sun) and bright redness (blood) – are bridged by a hypothetical conceptual link with fire, which is associated with both bright light and bright redness (red coals, a red glow). The shared factor, which unifies all these (sun, fire, and blood) is, I conjecture, high visibility: 'when people see a place where these things are they can always see these things'.

In a way, the Burarra concept behind *-gungaltja* can be compared with the French concept of *couleurs voyantes*, literally "seeing colours", that is very eye-catching, very 'visible' (noticeable) colours. But in Burarra what matters is not colours as such (whether 'eye-catching' or not), but, more generally, the visual appearance.

Turning now to *-gungundja* we will note that it is, as it were, an unmarked term, which covers the vast majority of visible objects (including, *inter alia*, bright 'green' leaves, the 'blue' sky, deep 'orange' plastic buckets, as well as 'black' rain-bearing clouds) – in Jones and Meehan's account, *all* the Munsell chips or, under pressure from the researchers, ninety percent of them. This suggests that the two terms, *-gungaltja* and *-gungundja*, are not symmetrical

opposites, but rather that, when the two are opposed, *-gungundja* refers to the absence of conspicuous visibility (which is implied by *-gungaltja*). This leads us to the following explication:

X is *-gungundja* =
a. some things are like this:
b. when people see a place where these things are they can always see these things
c. many other things are not like this
d. X is like these other things

The fact that these explications could be phrased in Burarra itself (as shown in Wierzbicka, in press) makes them, in my view, plausible hypotheses about Burarra conceptualizations: they rely exclusively on concepts for which Burarra itself has words. While the details of these explications may require further adjustments, they make it clear that these key Burarra visual descriptors are not 'colour' terms.

Not all visual descriptors are colour terms. For example, in English *dark* and *light* are visual descriptors but not colour terms. Roughly speaking, they refer to light rather than to colour. A word like *-gungaltja* may appear to have something to do with colour because it applies, *inter alia*, to what is called in English *red*. But not every red is *-gungaltja*, and not every *-gungaltja* is red. Dark reds are not *-gungaltja*, and shiny, silvery *-gungaltja* is not red. A word which applies to both bright red and silver is not a 'colour' word: it is a word whose meaning does not separate colour from brightness and light. What unites all the *-gungaltjas* is not a particular colour but, I suggest, visual conspicuousness and the association with sun, fire and blood.

As Hargrave (1982) has pointed out, from the point of view of a nomad people living the kind of life that Australian Aboriginal groups have traditionally lived, there may have been no need to have words for describing the different colours which they could discern in their visual world. There was a need to distinguish pigments used in traditional paintings, and words for those pigments are well attested. The appearance of some other objects could also be described by comparing them with the appearance of those pigments, but such a description did not separate 'colour' from all the other visual characteristics. On the other hand, it was obviously important to distinguish between day and night, between daytime vision, which includes bright light and glaring, conspicuous perceptions, and night-time vision, which is restricted to dark and dull perceptions. It was also important to pay attention to fire and to blood. These

are concerns which the visual vocabulary of languages like Burarra reflects. Until recently, the concern with colours and the very concept of 'colour' had no place in those societies. The fact that the English word *colour* has been recently borrowed by many Australian languages reflects the cultural and conceptual impact of the Anglo society on the communities where these languages are spoken. It is not a matter of cultural and conceptual 'evolution', as the B&K paradigm would have it, but of the contact with, and impact of, the mainstream English-speaking Anglo-Australian culture on a culture whose visual experience was not conceptualized in terms of colours.

People who habitually look at the world in terms of colours can find it difficult to believe that those from other cultures may have a profoundly different perspective on the visible world – for example, that they may habitually distinguish between things of high visibility (like sun, fire and blood) and those of low visibility, or between brightness and lack of brightness (cf. MacLaury 1992). The temptation to reject linguistic evidence and to go on assuming that everyone must have a concept of colour ("just like us"), even if they have no word for it, is natural and understandable. It is, however, a temptation that must be resisted; as must also be the temptation to assume that all visual descriptors that other people use to make sense of their visual experience are, essentially, "just like ours" (except that our systems may be richer and may represent a higher stage in the evolution of human categorization).

What applies to Burarra applies also to many other languages described in the literature. In particular, it applies to another Australian language, Martu Wangka, a version of which, spoken by some older informants, is included in Kay, Berlin, Maffi and Merrifield (1997) as an example of "Stage I system of colour naming". In this version (Martu Wangka I), the two key words (presented as "basic colour terms") are *miji-miji* (from *miji* "blood") and *maru-maru*, described by Kay and his colleagues as 'W/R/Y' and 'Bk/G/Bu'.

Again, since Martu Wangka (I) had no word for 'colour' and no apparent interest in colours, the whole idea of 'colour naming' does not apply to it at all: there was no 'colour naming' in Martu Wangka (I). Furthermore, *maru-maru* and *miji-miji* were clearly not 'colour terms'. Again, the decisive factor appears to have been not colour but, roughly speaking, high visibility (visual conspicuousness). Thus, things described in English as *sun-yellow* could be described in Martu Wangka (I) as *miji-miji* "blood-blood", whereas those described in English as *ochre* (yellow ochre) could be described as *maru-maru* (Hargrave 1982).

The fact that, literally, *miji-miji* means "blood-blood" makes the reference

to blood as one of the prototypes of *miji-miji* highly plausible. It does not mean, however, that the meaning of *miji-miji* in Martu Wangka (I) was significantly different from that of the Burarra word *-gungaltja*. In fact, all the available evidence suggests otherwise; and in the absence of any indications to the contrary, we can assume that by and large the explication assigned here to *-gungaltja* applies also to *miji-miji* (I), and also that the one assigned to *-gungundja* applies also to *maru-maru* (I). Again, the exact equivalents of these explications can be formulated in Martu Wangka itself. The same cannot, of course, be said about semantic formulae such as 'W/R/Y' (for *miji-miji*) offered in Kay, Berlin, Maffi and Merrifield (1997). The use of abbreviations ('W', 'R', and 'Y') instead of full words ('white', 'red', and 'yellow') cannot conceal the fact that in Kay, Berlin, Maffi and Merrifield's formula, the meaning of a Martu Wangka word is described through the prism of three English words – words none of which has a counterpart in Martu Wangka itself.

From a Martu Wangka point of view, the meaning of *miji-miji* (I) may be quite complex, but it is clearly not a combination of the meanings of three English colour words. As we have seen, the English-based formula 'W/R/Y' is not even referentially accurate because some (English) 'yellows' could not be described in Martu Wangka (I) as *miji-miji* and were in fact described as *maru-maru*. Conceptually, it is not only inaccurate but fundamentally wrong: clearly, this is not how Martu Wangka (I) speakers conceptualized their visual experience.

6. *John Lucy's (1997) critique of the NSM critique of the B&K paradigm*

In his trenchant critique of the Berlin and Kay paradigm in general and its reliance on Munsell's colour chart in particular, John Lucy writes:

> …Munsell first designed his color chart at the turn of the twentieth century (…), for accurate communication (…), in this case among artists, about colours, where the everyday language seemed wanting, inadequate for precise reference. It is ironic that this specialized device, first developed to circumvent or augment the natural semantics of everyday language, has become a central tool in the investigation of how our semantic systems operate. It is more odd still that it has become the standard by which we evaluate the semantics of other languages. And it is slightly incredible that it has become the model for the general relationship between natural language and cognition. (Lucy 1997:320-321)

I couldn't agree more; and in fact I made a similar point in my 1990 article "The meaning of colour terms" (and then again, in chapter 10 of my 1996 book *Semantics: Primes and universals*). Lucy acknowledges this convergence between his critique of the B&K paradigm and my own in a footnote which

reads as follows:

> Wierzbicka (1990) also criticizes equating the meaning of a color term with the perceptual qualities of a color chip. She proposes explaining cross-linguistic regularities in color term meaning by reference to the sequential encoding of widely recurrent salient experiences. Her approach, however, is intuitional and anecdotal; she provides no procedure for establishing the existence of specific meanings of color terms in a language. (Lucy 1997:342, note 2)

Thus, Lucy characterizes my approach to colour semantics as "intuitional and anecdotal" and as providing "no procedure for establishing the existence of specific meanings of color terms in a language". This critique seems odd given that the publications of my colleague Cliff Goddard (1998) and myself appear to be the only contributions to the field which do provide such a procedure. In particular, no procedures at all were proposed in Lucy's own paper, so that there is no way of knowing how Lucy himself would go about establishing the meaning of words like *red* or *-gungaltja*. Since this point has been missed, I will explain here once again what the procedure is. The NSM procedure, which has been introduced and illustrated in earlier sections of this paper, is based on the assumption that the meaning of a word can only be established by trial and error, that is by formulating and testing a number of working hypotheses, and that, to be admissible, these hypotheses must meet a number of criteria. These criteria can be summed up as follows:

1. All the hypotheses have to be formulated as a paraphrase understandable through ordinary language. Artificial formulae like 'W/R/Y' are inadmissible because they are unintelligible and cannot be tested in consultation with native speakers.
2. They have to be expressible in the language whose meaning they are supposed to represent. For example, a formula like 'white/red/yellow' cannot represent the meaning of a Martu Wangka word because Martu Wangka has no words for 'white', 'red' and 'yellow'.
3. They have to be expressible, by and large, in the language of independently established universal human concepts, such as SEE, PEOPLE, LIKE. The only other words allowed in the proposed formulae are words for 'semantic molecules' well attested in the language whose meanings are being described. For example, a semantic formula proposed for the Martu Wangka word *miji-miji* can include the word *miji* "blood" because *miji* "blood" is a well attested common word in Martu Wangka.
4. A paraphrase which meets all the above criteria (1-3) must also account for the range of a word's use. For example, if the formula proposed for the Martu Wangka (I) word *miji-miji* (I) assumed that this word means, essentially, "light

(in colour)" it would not account for the fact that a 'light blue' could not be described as *miji-miji*; or that, while blood (which is usually not dark) could be described as *miji-miji*, grass (which is usually not dark either) could not.

The four conditions stated above do not give us a mechanical 'discovery procedure' for establishing a word's meaning, but they do give us a workable methodology for formulating and assessing alternative hypotheses.

I have been exploring visual semantics along the lines set out here for a quarter of a century. During that time I have proposed for many words several different explications (cf. Wierzbicka 1980, 1985, 1990, 1996, 1999). This fact alone shows that I do not regard the methodology proposed here as a mechanical discovery procedure which would guarantee a unique and infallible outcome. Rather, it is a methodology which allows us to make adjustments, taking into account new insights and new observations and trying to better and better approximate to the truth – the truth about how the human mind works and how the speakers of different languages conceptualize their experience.

7. *Visual semantics – universals and commonalities*

To be able to establish the true universals of visual semantics we must first of all reject the false universals. Above all, we must reject the widespread view that there are some 'colour universals', whether absolute or implicational. There are no 'colour universals' because 'colour' itself is not a universal concept. What *is* universal is the concept of SEEing, and so SEEing, not colour, must be the starting-point, and the cornerstone, of our investigations.

So what, if anything, is common to the visual vocabulary – the vocabulary of seeing – that we find in different languages of the world? The main answers emerging from cross-linguistic studies undertaken in the wake of Berlin and Kay's immensely stimulating but ultimately misguided theory of 'colour universals' can be formulated as follows.

The main semantic mechanism for describing what one sees is, roughly speaking, the 'X looks like Y'-mechanism. This mechanism underlies visual descriptors like *gold* and *silver* in English, *karntawarra* "yellow ochre" in Martu Wangka, *yukuri-yukuri* "grass-grass" in Warlpiri and *latuy* "looking like lush vegetation" in Hanunóo (Conklin 1964:191). Ironically, most visual descriptors based on the 'X looks like Y'-mechanism were specifically excluded from the search for human universals undertaken within the B&K research programme. They were excluded because the descriptors in question did not meet the set of criteria chosen by Berlin and Kay for the category of 'basic colour terms'. Shweder and Bourne (1984:160) note that, by choosing, arbitrarily, that particular set of criteria, Berlin and Kay excluded from their

field of vision ninety-five percent of the relevant data. In my view, this excellent observation applies, above all, to descriptors based on the 'X looks like Y'-mechanism.

Most visual descriptors in the world's languages are not 'abstract colour terms' but terms which compare what one sees with some exemplar taken as a whole – an exemplar whose chromatic properties are not isolated (abstracted) from various other ones. To recall Conklin's classic example again, the Hanunóo word *latuy* does not mean that the *colour* of things so described looks like the colour of vegetation, but rather that the *things* so described look like lush vegetation. In the Hanunóo concept of 'latuy', the 'greenness' of the vegetation is not separated from its 'juiciness', but rather the exemplar is referred to globally, as an unanalyzed whole. Similarly, in English, *gold* as a visual descriptor does not mean that the *colour* of the thing so described looks like the colour of gold but rather that the *thing* so described looks like gold; and in Martu Wangka (IV) *yukuri-yukuri* "grass-grass" does not refer to the *colour* of grass as such, but rather to its overall appearance (in places near water or at times after rain).

In addition to the 'X looks like Y'-mechanism, all languages appear to pay some attention, one way or another, to the difference between 'high visibility' and 'low visibility', or between daytime vision and night-time vision. In some languages, this is constructed, as in English, as a distinction between a 'light' and a 'dark' appearance. In others, like Burarra and Martu Wangka (I), 'high visibility' is associated, more explicitly, with sun, fire and blood.

It appears that in all languages there are visual descriptors referring to some features of the natural environment. The sun and fire play an important role in the meaning of words referred to in the B&K literature as *macro-white* and *macro-red*; and, in my view, they also play a role in the meaning of words like *red* and *yellow*. While not universal, the sky, vegetation, and the earth are also widespread points of reference; and, in many areas of the world, so is snow.

Apart from such universal or widespread environmental features, all languages appear to have visual descriptors referring to some features of the local environment, in particular to visually salient local minerals and other pigments, especially those which can be used for painting, decoration, or dyeing.

It also appears that in all languages there are some visual descriptors linked to the human (and sometimes animal) body. First of all, there is the universal or near-universal significance of blood as a reference point for some visual descriptors. Apart from this, most languages appear to have visual descriptors related to the appearance of human hair, skin, or eyes. The English word *blond*

illustrates the first, and *white*, *black*, *yellow* and *red* used with reference to people, the second. As for eyes, in English human eyes (and nothing else) can be described as *hazel*, and, in Polish eyes (and nothing else) can be described as *piwne*, literally "beer-like (in colour)".

In addition to such commonalities in the visual descriptors, there is also a wide variety of more restricted and even idiosyncratic types. 'Abstract colour terms' like *red* and *blue*, characteristic of present-day English, are one such relatively restricted – though spreading – type. 'Mixed' colour terms like *pink* and *purple* are another (cf. Wierzbicka 1996). Compounds like *sky-blue* or *snow-white* are another; sub-categories like *scarlet*, another. As van Brakel (1993:132) has written:

> …a cursory study of the languages of the world presents us, not only with alternative sets of BCCs [basic colour categories] or no BCCs at all, but also with a whole gamut of words, bearing vague and varying similarities to colour words. The brain will not object and the mind subserves it all.

Van Brakel is right, of course. But it is not enough to show that Berlin and Kay's theory of 'basic colour categories' and 'colour universals', attractive and influential as it was, must be finally recognized as anglocentric and untenable. The human mind will not be satisfied with demolition, but will ask for new analyses and a new synthesis. As I have argued for many years, to understand the human conceptualization of the visual world in both its diversity and its commonalities, we need to recognize the role of environmental and bodily prototypes recurring in human experience (such as fire, sun, blood, sky and grass), and to base our analysis on the bedrock of universal human concepts; and it is only on this basis that we can hope to arrive at a tenable and enduring synthesis.

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A GRAMMATICAL NETWORK OF TZOTZIL-MAYAN COLOUR TERMS

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1. *Introduction*

In 2003, we studied the colour terms used by a group of Tzotzil-speaking Mayan weavers in the rural highlands of Chiapas, Mexico.[1] We traced the emergence of new colour concepts as these weavers adopted new colours of threads, such as grey, beige and taupe, into their traditional palette of vibrant colours, in order to demonstrate the role of social learning in the 'diffusion of innovations' model of cultural evolution (Rogers 1995). We used the standard Munsell colour chip test (MacLaury 1997), as well as methodologies that are new to colour studies but well accepted for study of language change: social network analysis (Wasserman & Faust 1994), grammaticalization (Bybee, Pagluica & Perkins 1994) and variation analysis (Labov 2001; Meyerhoff 2002). These new methodologies allow us, understandably, to have new perspectives on the subject of colour term evolution. By examining the variation of modifiers used in fully-compounded colour terms, and without reducing them to simplex or basic terms, we can find systematic patterns of change in colour words. We present here a small example of our approach, and argue, following Levinson (1997), for better language-internal studies of colour term evolution before attempting to discover universals.

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Our background in network analysis is concerned with tracing communicable diseases (Darrow et al. 1999; Potterat et al. 2004). Measures of communication distance between people who have some type of contact with each other, such as children who play together in a daycare centre, are compared mathematically with the transmission patterns of a particular pathogen. The network analysis reveals – often by simply looking at the resulting diagram of connections – which links are most crucial to the clinical or educational interventions necessary to slow or stop an outbreak. To gain insights into educational prevention, we sought to learn more about how newly acquired knowledge is adopted in a network. We chose to study colour because of the relatively straightforward relationship between stimulus and behavioural response provided by colour chip tests. The examination of language provided a way to quantify the relationships between individual-level adoption and the population-level change that is the focus of epidemiology. The language of colour in Tzotzil Mayan is highly inflected, morphologically rich, and well suited to both grammatical and variation analysis.

2. *The weavers' network*

For the network we used a snowball study design (Goodman 1961; Berg 1988) by following new colours of threads being adopted by a small group of weavers in the collective named Sna Jolobil ("House of Weavers") based in the town of San Cristóbal de las Casas. These threads were distributed from the Sna Jolobil office and passed in a fifty kilometre radius among the collective's weavers, some of whom only rarely leave their isolated homesteads to visit the main office. We tested these weavers with 330 chips of paper printed with regularly spaced, saturated hues from the Munsell® array, plus black, white and eight values of grey, which were shown one by one in random order and named by the weavers. Full-compound colour terms, including all modifiers and bound morphemes, were recorded (elaborate compounding is typical of Tzotzil colour vocabulary). An additional test comprised of the new colours of threads was added. The network in Figure 1 (see Section 8) depicts the communication web of the weavers who used the new colours, and the database includes, behind each of the larger nodes pictured, each weaver's colour tests. The resulting network is a computerized, relational corpus of about 29,000 colour terms that allows us to animate and visualize patterns of colour term evolution in a real population.

Since pale colours are associated with the Mayan concept of illness, they are not traditionally used by weavers, and so threads of these colours were not sold anywhere in the region. Nevertheless, we identified a small group of Sna

Jolobil weavers who had been working with the new colours to fulfil a large order of textiles for an architect in Mexico City. The cooperative office was the weavers' only source of these threads, which were ordered by mail from Europe, thus allowing us to identify subjects' exposure.

In 1998, a few head weavers from the collective had been trained by two workers at the Sna Jolobil office to incorporate the new colours, and, in turn, the head weavers trained others in their work groups at home. The head weavers returned to the office with finished textiles to be critiqued or sold, and when they needed more threads. There was intense, frequent and ongoing discussion through the network about these new colours as the weavers helped each other refine quality, and also when they obtained threads from each other. We literally followed these new colours as the threads were passed from the central office through the network.

3. *Tzotzil colour*

The Tzotzil colour lexicon is large, highly indexical, and has a sophisticated grammar. We documented almost 900 colour compounds among ninety weavers; Bricker (1999) attested to over 1000 compounds.

We found a high level of variation across speakers. For example, speakers in San Andrés who used terms deriving from *ik'* "black" or *sak* "white" to describe GREY had never heard the word *chak-xik* (from a brown cloth no longer used) which is used for GREY in the neighbouring hamlet of Chamula. In these communities, where there is little of the kind of standardization brought by Western literacy, individuals do not defer to any other as an authority for what a colour 'should' be named. They name colours in a more flexible manner, according to how they wish to express themselves at a particular time and place and indexically referring to the seasonal cycles of plants, the sky, and the mountain valleys which they share with all Tzotzil speakers. A farmer described a pink chip as *nich cholep* "aralia flower" and qualified it further with the exact location of the particular aralia plant he had in mind.

The morphology of Tzotzil colour is complex. In the hamlet of Zinacantán in the 1950s, Laughlin (personal communication) documented over 160 distinct forms just for *sak* "white" and Bricker (1999) found that, although there were only five basic colour terms in both Tzotzil and Yucatec Mayan, they were used in seventy-five compound stems that distinguish meanings for hue, brightness, saturation, relative size, discreteness, opacity and texture. Strings of modifiers such as adjectives, possessive articles, and markers of movement and distance from the speaker can converge in a single term. For example, the term *ik'ik'tik*

sk'anal syaxal (1), which is comprised of nine morphemes, was one weaver's response to a dark purple colour chip:

(1)	ik'ik'	+tik	s	+k'an+al	s	+yax+al
	a little black	slightly	its	yellowness	its	blue-greenness

Ik' "black" repeated means "less than complete black" and the bound morpheme *-tik* means "slightly". *K'an* "yellow" with the suffix *-al* means "yellowness", and the prefix *s-* marks the third person possessive. The same form is repeated for the following *syaxal*. This possessive form instructs the viewer to search the overtones and reflections of the black for hints of yellow and then for dark blue, similar to the way in which Renaissance painters analyzed coloured objects. This colour term is roughly equivalent to "dark's yellowness (including orange) and blue-greenness", showing that a literal translation does not arrive at the required "dark purple". Clearly, in-depth grammatical analysis is required.

Because of such morphological complexity we did not reduce the compound terms to simplex or basic terms. The guidelines for doing so recommend that all modifiers be stripped away from the head lexeme to reveal its colour category membership (Berlin & Kay 1969). Our compound colour terms were not so easily reduced. For example, speakers claimed that the head lexeme in the term *jalavre tsoj* (2) should be *tsoj* while the head lexeme in the term *jalavretik stsajal* (3) should be *jalavre*, even though both refer to the same colour of burgundy with the same root words, and their only difference is grammatical. Without a proper linguistic analysis it seemed unlikely that reduction would produce valid data or describe the way Tzotzil colour categories are configured.

(2)	jalavre	tsoj	
	red-thread[2]	red	
	"dark red" [or] "burgundy"		

(3)	jalavre	+tik	s	+tsajal
	red-thread	slightly	its	redness
	"dark red" [or] "burgundy"			

[2] This term derives from the dark red thread (*arabe*) that was adopted into all woven clothing in Zinacantán in the 1970s.

4. *Ancient Mayan colour*

The contemporary language of colour in Tzotzil has profound roots in pre-Conquest Mayan beliefs, in which colours had much to do with ritualized practices for space-time reckoning.[3] The central concept of life was framed by belief in a square or quadralineal universe in which the cardinal directions were represented by a deity and his / her corresponding cosmological cycle, number and colour: white (north), yellow (south), red (east), black (west), and with blue-green for the centre of the earth. León Portilla (1998) explained that the gods dynamically coloured all of the spatial universe of the ancient Maya, and that their universe was not static. It was a framework of colours which, at each moment, set the stage for *kinh*, the central concept of life, which was associated with the movement of light and the sun through its daily cycle.

The sacred colour words were used indexically, in reference and deference to this conceptual framework, to mean other words. This was in a form of rhyming, as evidenced by the system used in their orthography. This unusual system combined glyphs, consisting of main pictures, with phonetic affixes. The first two phonemes of the name of a pictographic glyph could refer to other things named with similar phonemes. The affixes guided the reader to interpret which phonemes of the main glyph should be read.

Tedlock documented how contemporary Quiche Maya still use a similar ritual speech form, in which the first two sounds of a spoken word are used to refer to other words that start with the same sound: "…names are 'read' not as words in themselves but as a kind of oral rebus for quite other words; these other words are linked to the day name by means of paronomasia – this is by means of poetic sound play" (Tedlock 2000:107). The five colours had day names in the Mayan calendar that linked them to astral cycles.

In this way, any of the five sacred colour terms could, and still can, be used in an indexical manner. The word *ik'* "black" can refer not only to its day names, or its deity who lives in the western landscape, but also to a dark wind without rain, a sunset or rage (Tedlock, 2000). Chanted prayers might employ the term *ik'* on one of its name days to call forth a hurricane (Eng. *hurricane* derives from the Mayan *ik'an*).

Just as a modern-day weaver chooses the designs in her *huipil* "blouse" to orient herself in her universe (Morris 1987), Tzotzil speakers use language to

[3] This concept of space-time is pervasive throughout indigenous America and is well attested in MacLaury's Vantage Theory (1997).

orient themselves spatially in their landscape.[4] In Mayan languages, spatial relationships are reckoned according to cardinal directions, in contrast with other possible systems, such as the European, where space is calculated from the point of view of the speaker, as with the 'left' / 'right' locatives. In Tzotzil, these positions would be described with 'east of' / 'west of' terms and grounded by the landscape (Brown & Levinson 2000).

5. *Using language structure to study change*

It seems that old beliefs still constrain some of the conventions for the use of colour words in Tzotzil. These conventions should determine which words are used more frequently, thus influencing their evolutionary trajectories. For example, ritualized forms of reference to the colours of the five directions would restrict the number of root terms and encourage the maintenance of a large number of modifiers to further qualify the basic colours.

During testing, subjects often referred to the landscape when trying to recall terms, holding up chips to match colours with the environment. The names of landscape features were often used: *yaxal vinajel* "blue-green of the sky", *yaxal balamil* "blue-green of fields", *yaxal vits* "blue-green of a distant hill", *yaxal yanal nichim* "blue-green of the leaves on a flower stem". In these constructions, the root *yax* "blue-green" is very general and has a large footprint in the colour space, but the extensive use of modifiers allows for high specificity. The memory load of such a large colour vocabulary can be somewhat relieved by easy reference to a constant and shared landscape. In principle, such a modifier-heavy method of construction can allow speakers to conventionalize indexical reference to the five directions while maintaining specificity through modifiers, and this probably reduces the pressure on the BLUE-GREEN (GRUE) category denoted by *yox* to split into two distinct categories. Support for this interpretation comes from the fact that Tzotzil has been classified as having only five basic terms (Berlin & Kay 1969; MacLaury 1997) despite having such a large colour lexicon, and also from the fact that the GRUE category has not split, despite the addition of PINK, ORANGE, BROWN and PURPLE categories as long as three decades ago. This evolutionary sequence differs somewhat from the 1969 Berlin and Kay model and may have been influenced by longstanding Mayan speech practices.

[4] See Brown and Levinson (2000) and Hanks (1990) for in-depth studies of locatives in Mayan languages.

6. *Grammaticalization*

Studies of grammaticalization detail how lexical items evolve into grammatical ones. The methodology traces the linguistic processes whereby some lexical items, which have specific context-bound functions, evolve into more general function words. The work identifies general principles of language evolution. Lexical items have very specific meanings and are highly constrained by context while less constrained by sentence structure. They exhibit high variation and high specificity of meaning and tend to be long. As these words move through the gradual clines in their histories they become bleached of specific meaning and exhibit both phonological and word-length reduction. Through cognitive, articulatory and semantic pressures during each utterance, some words move from an open-class, lexical paradigm to a closed-class, grammatical paradigm. It is use that drives this process, as words only change when they are spoken (Bybee, Pagluica & Perkins 1994).

There are properties of colour terms that indicate they have been subject to grammaticalization. According to Berlin and Kay, basic colour terms are monolexemic, psychologically salient, not hyponyms, and not contextually restricted. They are also likely to have the same distributional potential as other basic colour terms in the same language, to have morphological simplicity, not to be also the name of objects characteristic of the colour denoted, and not to be recent foreign loan words (1969:6). In terms of grammaticalization, these terms would possess such properties because they had been used more often and for longer periods than non-basic colour terms.

7. *Clines of pale colour terms*

Many Tzotzil colour terms originated in small context-specific niches, typically from body parts or foods that are part of the familiar experiences of daily life. We traced the etymologies of such words with Laughlin's dictionaries (1975, 1988), one covering the colonial period and the other the twentieth century. The term *sak-vilan* "pastel" originates in the word *vil* "shredding", referring to the fading of cloth from folding and fraying. Typical of a term being incorporated into a grammatical cline, it became bleached of its specific meaning as it grew from its context-specific origins to a wider generality as speakers applied it to different classes of objects and situations, as in (4):

(4)	sak >	sak +vil+an	>	sak-vilan >	sak-vilan alaxa
	white >	pale of frayed-like	>	pastel >	pastel orange

Sak “white” and *–vilan* “frayed-like” became bound, and were re-analyzed as a single term meaning “pastel”. Further along the cline the phrase became an adjective that could modify another object or colour, such as *alaxa*.

While the clines of established colour terms can be reconstructed in this manner, we have no record of the social pressures that contributed to their evolution. In Figure 1 we compare the evolution of the term *gris* “grey” to measures of real communication in the network.

For most subjects, the grey scale was denoted by only *ik’* and *sak.* Several others elaborated on this black / white paradigm with modified terms such as *saksaktik* “slightly white” and *ik’ik’tik* “slightly black”, or by using qualifiers whereby properties of other objects were incorporated, such as *sak-velan* “deathface-like” or *ik’-votsan* “mixed” or “water-like”. A few older speakers used a form in which *ik’* and *sak* were used for the extreme ends of the grey scale and intermediate tones were qualified by the concept of HALF (*o’lol ik’*). The term *o’lol* once referred to the sun at midpoint in the sky and now means “half”. Each of these examples indicates an older system in which there was no basic term for GREY.

8. *From* sak *to* sakil sgrisal

Figure 1 represents the entire snowball sample with three office workers at the centre, illustrating the adoption of the term *gris* into the existing black / white paradigm. Each shape represents a person, and each line represents their connection in terms of sharing any new colours of threads. The triangles, the large open circles, and the squares indicate the subset of weavers who work with grey threads. The small dots represent persons not relevant to this particular visualization for the adoption of *gris*. Persons connected to the centre (square, triangle and dot) get their threads directly from the office and pass them along the lines in the diagram. Circles indicate weavers who use only the paradigm of naming the grey range with *ik’* and *sak* (“black” and “white”). Squares indicate the weavers who adopted the term *gris,* and triangles indicate the weavers who incorporated the term *gris* into any kind of morphological complexity, such as *grisgristik* “slightly grey”, *ik’al gris* “black-like grey” or *sakil sgrisal* “white-like belonging to grey”. With few exceptions, the early adopters (triangles) cluster at the left, and appear to connect with one another. We can see that adoption of a new colour term is not entirely due to diffusion from the central office but tends to occur in small workgroups where there would be more ongoing discussion using the term, as pictured in the leftmost triangles. In almost all cases, the adopters were one step removed from the office workers in the office.

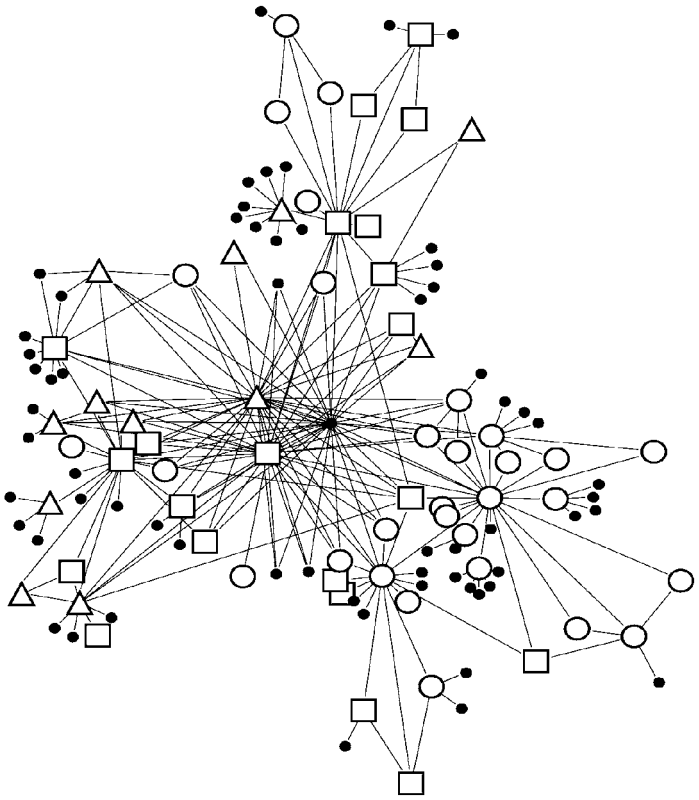

Figure 1. *Mayan weaver network showing the adoption of* gris

After this visualization of the situation, using the programme Pajek (Batagelj & Mrvar 2003), we examined whether both the use of, and communication about, grey thread was associated with the adoption of *gris*. Tests showed significant correlation between weavers who worked with grey thread and their use of *gris* for the corresponding colour chip.[5] Significance was

[5] Working with grey thread versus use of the term *gris* for sixty-six subjects: chi-square (Yates corrected) = 11.4 ($p \leq 0.001$), indicating a significant association.

not due to language contact, bilingualism or education.[6] The adoption of *gris* always began in naming the grey thread and only later spread to the chip of the same shade of grey,[7] indicating the context-specific origin of *gris* before the application of the term spread from the object to the more abstract chip.

9. *Conclusion*

In this brief example we demonstrate that the usage deriving from shared activity can affect the adoption of a new term as it generalizes both across the group and deeper into their language structure. We see that colour terms can originate with reference to objects, and through time and shared attention their colour features become abstracted away from the object and can be picked up in the same kind of clines we see in other examples of grammaticalization.

Network analysis provides a methodology for organizing complex relational data of a real population and reveals a momentarily stable picture of the kind of complicated forces that drive change. By utilizing the full linguistic data of compound terms and measures of communication we can show the emergence of *gris* in terms of speech practices and social pressures. But much more language-internal study is needed before we can identify all the mechanisms of change in each particular colour. Only then should we begin to select and test the universal parameters that constrain the dynamic relationship between historical, linguistic, behavioural, material and perceptual pressures on colour term evolution.

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[6] Schooling versus use of the term *gris* for sixty-five subjects: chi-square (uncorrected) = 0.13 (p=0.7), indicating non-significance. Schooling is a measure of both bilingualism and contact with Spanish.

[7] Twenty-one weavers used *gris* for the grey thread they worked with and not for the chip of the same grey. Conversely, none of the weavers used *gris* to name only the chip and not the thread.

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QUANTITATIVE LINGUISTICS IN THE STUDY OF COLOUR TERMINOLOGY
A RESEARCH REPORT

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Motto: Science is the art of reasonable simplifications.[1]

1. *The research problem and the goal of the study*

In 1969, Berlin and Kay published a study devoted to the analysis of colour terms in almost one hundred of the world's languages, belonging to various linguistic families and / or groups. The authors endeavoured to challenge the thesis of complete relativism in the encoding of colour: "Our feeling was that color words translate too easily among various pairs of unrelated languages for the extreme linguistic relativity thesis to be valid" (Berlin & Kay 1969:2). They advanced an alternative hypothesis, saying that there was a universal inventory of eleven basic colour categories, some or all of which were encoded into lexemes by different languages. Comparing the vocabularies of languages possessing fewer than these eleven categories, they determined that basic colour terms do not appear at random in the diachronic development of a language, but in an invariable sequence.

$$\begin{bmatrix}\text{white}\\ \text{black}\end{bmatrix} \rightarrow [\text{red}] \rightarrow \begin{bmatrix}\text{green}\\ \text{yellow}\end{bmatrix} \rightarrow \begin{bmatrix}\text{yellow}\\ \text{green}\end{bmatrix} \rightarrow [\text{blue}] \rightarrow [\text{brown}] \rightarrow \begin{bmatrix}\text{purple}\\ \text{pink}\\ \text{orange}\\ \text{grey}\end{bmatrix}$$

Figure 1: *The evolutionary scheme of Berlin and Kay (1969:4)*

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[1] This contribution is an improved and modified version of a paper published in Polish (Pawłowski 2003a). I would like to thank Carole Biggam for her help with this version.

The English words in Figure 1 represent the foci of basic colour categories (in later updatings of the sequence, they represent the full categories). The scheme is to be interpreted as follows: all languages possess basic terms for the black and white foci; if a language possesses three basic terms, that third term will refer to the red focus; if it possesses four terms, then, besides terms for black, white and red, it will contain a term for the green or yellow foci, and so on. The above sequence, therefore, read from left to right, indicates the chronological (evolutionary) order of the appearance of basic colour terms in the phylogenesis of language, according to Berlin and Kay (1969:4). Later amendments of the sequence proposed macro-categories at the early stages (for example, a macro-red category which contained all the warm colours, until individual terms for these were developed), and differing trajectories (routes along the now more elaborate sequence representing the 'choices' made by different languages; see, for example, Kay & Maffi 2000). In this paper, reference to the sequence should be understood to indicate the original Berlin and Kay simple sequence, which was found convenient for testing the methodology here presented.

The goal of this study is a comprehensive quantitative analysis of the structure of the lexical field of colour in a multilingual corpus of texts. First, the hypothesis of a statistical independence of the frequency distributions of colour terms in particular text corpora was tested. My inference was based on the assumption that frequency distributions of colour terms in representative corpora indirectly correlate with conceptualizations of the colour space by speakers of the languages involved. If the distributions of colour terms were found to be statistically independent, and with similar results, in various languages, it would indirectly support the *universalistic hypothesis*, which says that the conceptualization of the colour space is identical for speakers of different languages, and thus should be regarded as language-independent. On the other hand, the discovery of different frequency distributions in the lexical field of colour would provide a convincing argument for the *relativistic hypothesis*: if the quantitative structures of the lexical field of colour proved to be significantly different in genetically, typologically and culturally related languages, the possibility of the existence of an important similarity in all other languages would have to be regarded as of small probability.

Next, the hypothesis of a possible correlation between the frequencies of colour terms and the order of their appearance in the phylogenesis of language was tested. To this end, the Berlin and Kay evolutionary scheme (Fig.1) was compared with one comprising the same colour categories, but based on the frequencies of the relevant lexemes. It was assumed that the order of colour

terms arranged according to their mean frequencies in representative text corpora might be in agreement, to some extent, with the sequence of colour category foci in the evolutionary scheme, which would confirm the moderate variant of the universalistic hypothesis.

Relationships among the semantic colour categories found in individual languages were not the subject of detailed analysis, and data originating from bilingual dictionaries were considered adequate for my purposes (see Appendix). The reason for this, and decisions as to the corpora used (see Section 2) is that the crux of the research, and of this paper, is the development of the methodology. For these purposes, the data used were those which were readily available to the researcher. If the methodology can be shown to operate successfully, it will be ready for using with larger quantities of multilingual data as full corpora are developed for more of the world's languages.

2. *The text corpora*

Two types of corpora comprising linguistically processed texts are used in quantitative linguistics. Concordances, word lists and frequency dictionaries, compiled in the past, are among the older sources, while the modern ones are available in digital format as electronic corpora (Biber et al. 1998:14–15). Besides these, an immense number of unprocessed electronic texts may be found on the Internet, which could be regarded as a sort of megacorpus.

When selecting the linguistic material to be used, different criteria were employed. First of all, I avoided being led by the assumption that a newer and / or larger corpus is automatically better than an older and / or smaller one. My experience shows that frequencies of basic colour terms can be calculated with sufficient accuracy in corpora composed of 0.5 - 1 million word forms and that these frequencies do not vary considerably with time (Pawłowski 2003b). Secondly, it was required that the verification base should consist of a relatively large number of languages. Thirdly, as absolute frequencies of lexemes in a semantic field can be replaced with proportional values which are not biased by the corpus size, both large and small corpora were included in the study. Finally, respecting the above criteria, data from ten frequency dictionaries and from one large corpus were used (see References). This allowed a quantitative analysis of basic colour terms in ten languages – Czech, Polish, Russian, Slovak, Ukrainian, Spanish, French, Rumanian, Italian and English.

It should be mentioned here that the corpora used were not stylistically and chronologically homogeneous. Some of the dictionaries contain a mixture of registers, which is supposed to imitate a sort of 'average' language (e.g. those for Polish, Czech, Slovak, and Russian). Others represent only literary prose

(e.g. those for Ukrainian and French). As far as chronological uniformity is concerned, the Juilland dictionaries include texts from the 1920s and 1930s (Rumanian, Spanish, and French), while the remaining ones embrace texts and literary works from the 1950s, 1960s and 1970s. These differences are mentioned here, since, although not problematical for simply testing the methodology, they may affect the results obtained.

It should also be pointed out that null frequencies of some colour categories (or lexemes) do not mean that the respective terms do not appear at all in the corpus. It only means that their frequencies are too low to be considered significant. This especially concerns the data derived from the *British National Corpus* (Leech, Rayson & Wilson 2001) in which several English colour terms appear, but very few have statistically significant frequencies

3. *Results*

3.1 *Universality and relativism in the encoding of colour*

The data used in further analyses and calculations are presented in Table 1. As the list of the compared colour categories was based on Berlin and Kay's proposal (VIOLET has been added), salient colour terms in different corpora had to be classified into single categories. Consequently, for certain colour categories which, in particular languages, are denoted by several salient colour terms, the results for the individual lexemes were treated jointly. This principally concerns the BROWN category (e.g. Sp. *marrón*, *castaño*; Pol. *brązowy, brunatny*; Rus. *бурый*, *коричневой*) and the BLUE category (e.g. Pol. *niebieski*, *błękitny*, *granatowy*; Cz. *modrý*, *blankytný*, *tmavomodrý*, Uk. *голубий*, *блакитний*, *синий*). In such cases, the total of the individual frequencies of such lexemes was taken as the figure for the category (see the Appendix for a full list of colour terms). This operation, unacceptable in the analysis of a single language, was a necessary condition of a quantitative comparison of colour terminology across different languages.

Colour categories in Table 1 are presented in the same order as they appear in Berlin and Kay's scheme. Inspection of their mean frequencies (third row from the bottom) reveals a decreasing tendency, the only exceptions being BLUE, GREY and PINK. The mean frequency of the appearance of BLUE among all the colour categories is 11.2%, which is more than that of YELLOW (5.1%) and GREEN (10.4%). GREY, placed last in the original Berlin and Kay scheme, also occupies a very high position, and this supports the 1977 amendment to the scheme whereby GREY was henceforth treated as a wildcard category (Witkowski & Brown 1977).

Analysis of these data provokes the question of the independence of the relative frequencies of colour lexemes as constructed from the corpora used in the study, and, assuming the data is truly representative, as also appears in the respective languages. According to neo-Humboldtian theories (e.g. Whorf 1956), each language is a unique conceptualization of the external world, and one may expect that qualitative variations in the segmentation of the colour space will be accompanied by quantitative differences, apparent in the frequencies of occurrence of the respective lexemes. It should be pointed out, however, that every human with normal vision sees the same colours, and also that, in this research, all the corpora studied represent languages used in geographically, climatically and culturally similar regions, and all these languages belong to the same family. Where these circumstances pertain, the quantitative structure of the semantic field of colour would probably always be similar. On the basis of these considerations, it was, therefore, hypothesized that the distribution of frequencies of colour categories in the corpora studied is identical (i.e. language-independent) and that the observed variations are statistically insignificant, as they result from the random factor.

Initial verification of the above hypothesis began with calculating the standard deviation (σ) and the coefficient of variance (σ/m) for the frequencies of the individual colour categories (respectively, the second and first rows from the bottom of Table 1). The coefficient of variance is a measure of how much variation exists in relation to the mean and is thus a reliable measure of the dispersion in samples. Those colour categories which appear most frequently have relatively steady frequencies and low dispersions (in the Table, labelled *white*, *black*, *red*, *blue*). It is also noteworthy that, in spite of some colour categories consisting of more than one colour term, frequencies of occurrence of the basic categories in all the individual corpora remain more or less stable. A good example is BLUE, which consists of three salient terms in Russian (*голубой*, *синий*, *блакитний*) and in Ukrainian (*голубий*, *синій*, *блакитний*), two of them being considered basic in these languages. The frequency of occurrence of these macro-categories turned out to be relatively high, but not considerably higher than in the other languages, and lower than in Spanish.[2]

[2] It should be noted that the data representing the *British National Corpus* in Tables 1 and 2 are not row frequencies but average frequencies per one million occurrences / wordforms (cf. Leech, Rayson & Wilson 2001:25).

	white	*black*	*red*	*green*	*yellow*	*blue*	*brown*	*purple*	*pink*	*orange*	*grey*	*violet*	Sum
Czech	604	519	416	205	96	206	127	3	158	4	146	16	**2500**
(FSSDTČJ)	*24.2%*	*20.8%*	*16.6%*	*8.2%*	*3.8%*	*8.2%*	*5.1%*	*0.1%*	*6.3%*	*0.2%*	*5.8%*	*0.6%*	1.00
English	207	226	126	101	41	92	45	11	30	14	48	0	**941**
(BNC)	*22.0%*	*24.0%*	*13.4%*	*10.7%*	*4.4%*	*9.8%*	*4.8%*	*1.2%*	*3.2%*	*1.5%*	*5.1%*	*0.0%*	1.00
French 1	136	113	74	35	7	58	17	0	0	0	20	0	**460**
(FDFW)	*29.6%*	*24.6%*	*16.1%*	*7.6%*	*1.5%*	*12.6%*	*3.7%*	*0.0%*	*0.0%*	*0.0%*	*4.3%*	*0.0%*	1.00
French 2	298	278	170	101	77	134	61	0	0	9	98	12	**1238**
(VRFDF)	*24.1%*	*22.5%*	*13.7%*	*8.2%*	*6.2%*	*10.8%*	*4.9%*	*0.0%*	*0.0%*	*0.7%*	*7.9%*	*1.0%*	1.00
Italian	155	115	122	91	40	79	22	0	16	0	55	11	**706**
(LFLIC)	*22.0%*	*16.3%*	*17.3%*	*12.9%*	*5.7%*	*11.2%*	*3.1%*	*0.0%*	*2.3%*	*0.0%*	*7.8%*	*1.6%*	1.00
Polish	87	93	52	39	19	36	24	0	8	2	29	2	**391**
(SFPW)	*22.3%*	*23.8%*	*13.3%*	*10.0%*	*4.9%*	*9.2%*	*6.1%*	*0.0%*	*2.0%*	*0.5%*	*7.4%*	*0.5%*	1.00
Rumanian	165	104	75	78	64	60	18	0	0	0	0	0	**564**
(FDRW)	*29.3%*	*18.4%*	*13.3%*	*13.8%*	*11.3%*	*10.6%*	*3.2%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*0.0%*	1.00
Russian	471	473	371	216	109	317	88	30	49	16	116	22	**2278**
(ČSRJ)	*20.7%*	*20.8%*	*16.3%*	*9.5%*	*4.8%*	*13.9%*	*3.9%*	*1.3%*	*2.2%*	*0.7%*	*5.1%*	*1.0%*	1.00
Slovak	461	473	315	275	104	181	43	7	71	19	58	19	**2026**
(FSS)	*22.8%*	*23.3%*	*15.5%*	*13.6%*	*5.1%*	*8.9%*	*2.1%*	*0.3%*	*3.5%*	*0.9%*	*2.9%*	*0.9%*	1.00
Spanish	141	102	44	51	21	71	6	0	0	3	41	6	**486**
(FDSW)	*29.0%*	*21.0%*	*9.1%*	*10.5%*	*4.3%*	*14.6%*	*1.2%*	*0.0%*	*0.0%*	*0.6%*	*8.4%*	*1.2%*	1.00
Ukrainian	282	310	193	118	50	175	23	4	36	0	114	10	**1315**
(ČSSUXP)	*21.4%*	*23.6%*	*14.7%*	*9.0%*	*3.8%*	*13.3%*	*1.7%*	*0.3%*	*2.7%*	*0.0%*	*8.7%*	*0.8%*	1.00
Totals:	3007	2806	1958	1310	628	1409	474	55	368	67	725	98	**12905**
Mean (m):	***24.3%***	***21.7%***	***14.5%***	***10.4%***	***5.1%***	***11.2%***	***3.6%***	***0.3%***	***2.0%***	***0.5%***	***5.8%***	***0.7%***	1.00
σ:	.032	.025	.022	.021	.023	.020	.015	.005	.019	.005	.026	.005	
100*σ /m:	13%	11%	15%	20%	45%	18%	40%	157%	93%	99%	44%	72%	

Table 1: *Absolute and relative frequencies of basic colour categories*
Notation: m = mean; σ = standard deviation; σ/m = coefficient of variance

This preliminary analysis of simple dispersion measures does not yield a satisfactory answer to the initial question, but constitutes a good point of departure for the subsequent tests. An effective research tool in studying the independence of the data contained in Table 2 is the chi-square (χ^2) test. Its virtue is that it does not require initial assumptions pertaining to the statistical distribution of the population.

The conditions of the test are defined as follows: (1) *n* colour categories from the multilingual corpus of texts (all the individual corpora being considered as a whole) are chosen at random; (2) it is assumed that each randomly selected term possesses two significant characteristics: language and colour category. We test the null hypothesis (H_0), which assumes the statistical independence of these characteristics, against the alternative hypothesis (H_1), which assumes a lack of independence.

		white	*black*	*red*	*green*	*yellow*	*blue*	*brown*	*purple*	*pink*	*orange*	*grey*	*violet*
Czech	*obs.*	604	519	416	205	96	206	127	3	158	4	146	16
(FSSDTČJ)	*theor.*	*583*	*544*	*379*	*254*	*122*	*273*	*92*	*11*	*71*	*13*	*140*	*19*
English	*obs.*	207	226	126	101	41	92	45	11	30	14	48	0
(BNC)	*theor.*	*219*	*205*	*143*	*96*	*46*	*103*	*35*	*4*	*27*	*5*	*53*	*7*
French 1	*obs.*	136	113	74	35	*7*	58	17	0	0	0	20	0
(FDFW)	*theor.*	*107*	*100*	*70*	*47*	*22*	*50*	*17*	*2*	*13*	*2*	*26*	*3*
French 2	*obs.*	298	278	170	101	*77*	134	61	0	0	9	98	12
(VRFDF)	*theor.*	*288*	*269*	*188*	*126*	*60*	*135*	*45*	*5*	*35*	*6*	*70*	*9*
Italian	*obs.*	155	115	122	91	40	79	22	0	16	0	55	11
(LFLIC)	*theor.*	*165*	*154*	*107*	*72*	*34*	*77*	*26*	*3*	*20*	*4*	*40*	*5*
Polish	*obs.*	87	93	52	39	19	36	24	0	8	2	29	2
(SFPW)	*theor.*	*91*	*85*	*59*	*40*	*19*	*43*	*14*	*2*	*11*	*2*	*22*	*3*
Rumanian	*obs.*	165	104	75	78	64	60	18	0	0	0	0	0
(FDRW)	*theor.*	*131*	*123*	*86*	*57*	*27*	*62*	*21*	*2*	*16*	*3*	*32*	*4*
Russian	*obs.*	471	473	371	216	109	317	88	30	49	16	116	22
(ČSRJ)	*theor.*	*531*	*495*	*346*	*231*	*111*	*249*	*84*	*10*	*65*	*12*	*128*	*17*
Slovak	*obs.*	461	473	315	275	104	181	43	*7*	71	19	58	19
(FSS)	*theor.*	*472*	*441*	*307*	*206*	*99*	*221*	*74*	*9*	*58*	*11*	*114*	*15*
Spanish	*obs.*	141	102	44	51	21	71	6	0	0	3	41	6
(FDSW)	*theor.*	*113*	*106*	*74*	*49*	*24*	*53*	*18*	*2*	*14*	*3*	*27*	*4*
Ukrainian	*obs.*	282	310	193	118	50	175	23	4	36	0	114	10
(ČSSUXP)	*theor.*	*306*	*286*	*200*	*133*	*64*	*144*	*48*	*6*	*37*	*7*	*74*	*10*

Table 2: *Observed and theoretical frequencies of colour categories*
Notation: *obs.* = observed frequency; *theor.* = theoretical frequency

We construct a contingency table containing the observed and theoretical frequencies of the colour categories in the individual languages (Table 2). The value of χ^2 calculated on the basis of this is 793. Because the number of

degrees of freedom exceeds 30 ($\nu = 110$), we cannot use χ^2 as the scale in calculating the distribution tables. However, as for $\nu \to \infty$ the random variable $X = \sqrt{2\chi^2}$ asymptotically approaches the normal distribution $N(\sqrt{2\nu - 1}, 1)$, the value $u = \sqrt{2\chi^2} - \sqrt{2\nu - 1}$, possessing the normal distribution N(0,1), can be calculated instead of chi-square.[3] We then verify hypothesis H_0 for the distribution thus defined, assuming a bilateral critical region with a level of significance of $\alpha = 0.01$. Because the value of U is within the critical region (u_{emp} = 25 > $u_{0,01}$ = 2.57), we reject the hypothesis H_0 in favour of the alternative hypothesis H_1, which excludes the independence of the characteristics under study. We conclude that, if the corpora used are indeed representative, one can assume, with an error probability of less than 1%, that the frequency distribution of colour categories in the languages studied is not language-independent.

The above results of the chi-square test show that extreme universality in the conceptualization of colour categories in different languages is very improbable. This does not mean, however, complete rejection of the universalistic hypothesis but rather its replacement with one of moderate universality. An argument in support of such a thesis is that the order of colour categories, arranged in the individual languages according to their frequencies, is very similar in every case. A statistical measure of this similarity could be provided by the Spearman rank correlation coefficient, which is mainly used in evaluating qualitative data presented on an ordinal scale. Although it does not take into account all the information contained in the data (frequency values were omitted), it seems sufficient to verify the moderate version of the universalistic hypothesis. The Spearman coefficient is calculated according to the following equation:

$$(1) \quad R_{xy} = 1 - \frac{6\sum_{i=1}^{n} c_i^2}{n(n^2 - 1)}$$

where c_i – difference of rank for the characteristic *i*
n – number of characteristics

R_{xy} assumes values within the interval $[-1; 1]$. Values close to 1 or –1 indicate strong rank correlation (respectively positive or negative), while values

[3] Cf. Hammerl & Sambor 1990:310.

close to 0 indicate the lack of such a correlation. The rank distribution of the particular colour categories in the corpora studied are presented in Table 3. Items marked with an asterisk have nul frequency. This fact was taken into account in the calculations.

	Czech	English	French (FDFW)	French (VRFDF)	Italian	Polish	Rumanian	Russian	Slovak	Spanish	Ukrainian
white	1	2	1	1	1	2	1	2	2	1	2
black	2	1	2	2	3	1	2	1	1	2	1
red	3	3	3	3	2	3	4	3	3	5	3
green	5	4	5	5	4	4	3	5	4	4	5
yellow	9	8	8	7	7	8	5	7	6	7	7
blue	4	5	4	4	5	5	6	4	5	3	4
brown	8	7	7	8	8	7	7	8	9	8	9
purple	12	11	9*	11*	11*	12*	8*	10	12	11*	11
pink	6	9	10*	12*	9	9	9*	9	7	12*	8
orange	11	10	11*	10	12*	10	10*	12	10	10	12*
grey	7	6	6	6	6	6	11*	6	8	6	6
violet	10	12*	12*	9	10	11	12*	11	11	9	10

Table 3: *Rank distribution of the colour categories in the corpora (languages) studied (Items marked with an asterisk have nul frequency. This fact was taken into account in the calculations.)*

	Czech	English	French (FDFW)	French (VRFDF)	Italian	Polish	Rumanian	Russian	Slovak	Spanish	Ukrainian
Czech		0.92	0.93	0.87	0.93	0.94	0.74	0.92	0.94	0.85	0.95
English	2.69		0.96	0.92	0.94	0.99	0.86	0.96	0.94	0.89	0.94
French (FDFW)	3.07	3.20		0.95	0.94	0.95	0.86	0.94	0.90	0.93	0.94
French (VRFDF)	2.88	3.04	3.16		0.96	0.94	0.85	0.93	0.88	0.94	0.93
Italian	3.10	3.13	3.12	3.17		0.95	0.83	0.96	0.94	0.92	0.96
Polish	3.11	3.29	3.15	3.13	3.16		0.88	0.96	0.94	0.92	0.95
Rumanian	2.46	2.85	2.84	2.82	2.77	2.90		0.88	0.89	0.87	0.87
Russian	3.06	3.21	3.13	3.10	3.18	3.18	2.91		0.93	0.91	0.99
Slovak	3.11	3.11	2.98	2.92	3.10	3.13	2.95	3.08		0.86	0.95
Spanish	2.81	2.97	3.10	3.13	3.04	3.06	2.88	3.02	2.85		0.91
Ukrainian	3.15	3.13	3.13	3.08	3.19	3.15	2.89	3.27	3.15	3.01	

Table 4: *Rank correlation of the corpora by order of categories based on lexeme frequency*

Values of the coefficient R_{xy} were calculated for all the language pairs and are presented in Table 4 (numbers above the diagonal). The results indicate a strong correlation of the colour sequence in different languages. The coefficient R_{xy} can be fully evaluated because its values, treated as the results of a random variable, have a normal distribution with the parameters $m = 0$ and $\sigma = 1/\sqrt{n-1}$ (Hammerl & Sambor 1990:333–334). We assume as the null hypothesis (H_0) that there is no rank correlation among the colour categories, while the alternative hypothesis (H_1) speaks for the existence of such a correlation. The values of the coefficient R_{xy} are positive and relatively high, which allows us to test the H_0 hypothesis on a level of significance of $\alpha = 0.01$ with a unilateral critical region. Using the tables of the normal distribution, we define the critical region for the statistic U as $\{u_{emp} > u_{0,01} = 2.33\}$. The values of U are calculated as follows:

$$(2) \quad u_{emp} = \frac{R_{xy} - m}{\sigma}$$

With $m = 0$ and $\sigma = 1/\sqrt{n-1}$ this formula yields:

$$(2a) \quad u_{emp} = R_{xy}\sqrt{n-1}$$

The results of these calculations are presented in Table 4 below the blank diagonal.

All the values of U belong to the critical region ($u_{emp} > 2.33$), which allows us to reject the H_0 hypothesis in favour of the alternative hypothesis H_1, which stands for the existence of a rank correlation of colour categories in different corpora.

Interpreting this result in linguistic terms, it must be stated that, if the corpora used are truly representative, one can assume, with a probability of error of less than 1%, that colour categories in the languages under study, ordered according to their frequencies of occurrence, are mutually correlated. This result thus provides evidence that moderate universality in the conceptualization of colour categories is very probable. However, full confirmation of this hypothesis would require samples from languages which are markedly different from each other with regard to their origin and culture.

In my opinion, the negative result of the χ^2 test presented earlier has a much greater explanatory power then the positive result of the rank correlation test. The refutation of the universalistic hypothesis with regard to the data

sampled from closely related languages excludes, in principle, the possibility of its confirmation from any kind of data. It thus provides a strong argument in support of the relativistic approach to the conceptualization of colour and, possibly, of extralinguistic reality in general. In conclusion, the results achieved so far lead to a clear weakening of the universalistic hypothesis regarding the conceptualization of colour, but, nevertheless, they indicate that a moderate universality is very probable in this area. It should be stressed that this result corroborates some of the postulates and conclusions of Berlin and Kay, but is based on a completely different methodology.

3.2 *The structure of the semantic field of colour: corpus assessment*

The results presented above describe the global structure of the semantic field of colour. Frequencies of individual colour categories, however, have different coefficients of variance (cf. Table 1) and contribute in different degrees to the overall variability of the data. By using the so-called *partial chi-square* coefficient (Boursin 1981:78), one can calculate these particular contributions and thus compare the differences in the theoretical and observed frequencies of all the analyzed colour categories (Table 5).

	white	*black*	*red*	*green*	*yellow*	*blue*	*brown*	*purple*	*pink*	*orange*	*grey*	*violet*	Total %)
Czech	0.10	0.14	0.45	1.18	0.68	2.07	1.70	0.69	13.29	0.78	0.03	0.06	**21.17**
English C)	0.09	0.28	0.25	0.04	0.06	0.14	0.40	1.53	0.05	2.14	0.06	0.90	**5.94**
French FW)	0.98	0.21	0.03	0.37	1.33	0.15	0.00	0.25	1.65	0.30	0.17	0.44	**5.88**
French F)	0.04	0.04	0.21	0.61	0.59	0.00	0.67	0.66	4.45	0.13	1.47	0.09	**8.96**
Italian	0.07	1.22	0.26	0.66	0.12	0.01	0.08	0.38	0.11	0.46	0.75	0.75	**4.84**
Polish	0.02	0.09	0.11	0.00	0.00	0.13	0.82	0.21	0.11	0.00	0.28	0.04	**1.83**
Rumanian	1.08	0.36	0.16	0.95	6.13	0.01	0.04	0.30	2.03	0.37	3.99	0.54	**15.96**
Russian	0.85	0.13	0.23	0.13	0.00	2.36	0.03	5.34	0.49	0.19	0.14	0.16	**10.06**
Slovak	0.03	0.30	0.02	2.95	0.04	0.92	1.67	0.04	0.38	0.86	3.45	0.11	**10.77**
Spanish	0.86	0.02	1.51	0.01	0.04	0.76	0.99	0.26	1.75	0.01	0.87	0.18	**7.25**
Ukrainian	0.24	0.26	0.03	0.23	0.39	0.87	1.67	0.06	0.01	0.86	2.75	0.00	**7.35**
Total (%):	**4.36**	**3.04**	**3.28**	**7.11**	**9.38**	**7.42**	**8.06**	**9.73**	**24.31**	**6.11**	**13.94**	**3.27**	100.0

Table 5: *Partial chi-square for the frequencies of the colour categories (in percentages)*

The most irregular colour-language pair (column-row in Table 5) is PINK in Czech (as much as 13.29% of the total variability). Less significant, but still

noteworthy, seem to be YELLOW in Rumanian (6.13% of the total variability) and PURPLE in Russian (5.34% of the total variability). All the other individual contributions are relatively small. These three pairs account for about 25% of the total deviation of the observed frequencies from their theoretical distribution. It is interesting that the deviation of the empirical frequencies of the BLUE categories from their theoretical values in the case of Russian and Ukrainian (both BLUEs amalgamating results for the terms considered to be salient in each language) is not really significant (2.36% and 0.87%). A reliable explanation of all these deviations is not possible, however, without a detailed analysis of the collocations of the colour terms studied, a process which must await future research.

The data in Table 5 also allow a comparison of the colour categories and of the total data selected from each corpus (the bottom row and the extreme right column). In the case of the categories, the irregularity of PINK is apparent, as is that of the categories with the lowest frequencies. Excluding VIOLET because of its very low frequency, the most stable categories prove to be BLACK (merely 3.04% of the variability in the whole semantic field), RED (3.28%), and WHITE (4.36%). In the case of the corpora, the right-hand column shows that Polish, for example, is responsible for 1.83% of the total deviation of the observed frequencies from the theoretical ones.

Taking into account the above observations, χ^2 tests of independence were also performed on the contingency table, from which the most 'irregular' colour categories and/or corpora (rows and columns, respectively) were removed. This manipulation did not, however, influence the final result, and the hypothesis of independence (H_0) was rejected each time. This argument speaks, therefore, all the more strongly against extreme universality in the conceptualization of colour categories.

3.3 *Modelling the structure of the semantic field of colour*

Frequencies of colour categories were put in a decreasing order and described with a logarithmic function $y = a \ln x + b$, where the variable y is the contribution of a given category to the semantic field, while x is the diminishing order number of the element (category) in the semantic field (Fig. 2). The parameter a describes the slope of the curve and should be interpreted as the degree of uniformity of the contributions of subsequent elements to the semantic field. The greater the differences between subsequent frequencies, the higher is a. With each colour category appearing with a similar frequency, a would approach zero. The parameter b is the theoretical value of the most common element in the field. The function estimated here fits the data very

well, as it explains as much as 97.6% of the variability of the observed data ($R^2 = 0.976$).[4]

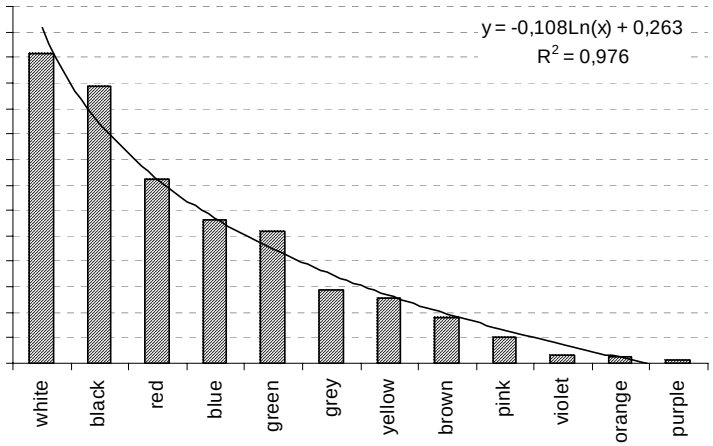

Figure 2: *Function model of the semantic field of colour*

From the quantitative point of view, the semantic field of colour, as presented in Fig.2, could be regarded as a highly ordered structure susceptible to description by means of a mathematical function – probably of the same type, but having different parameter values in every language. Decreasing frequencies of use of different colour categories in this semantic field would represent the effect of the principle of least effort (Roelcke 2002), which assumes that language users tend to minimize their linguistic effort (here shown by the small number of the most frequently used colour categories and lexemes) in order to transfer a given amount of information (here the description of the colour space, which is an extremely rich aspect of extra-linguistic reality; see also Pawłowski 2006).

3.4 *The evolutionary and frequency schemes*

The quantitative structure of the semantic field of colour was compared with Berlin and Kay's evolutionary sequence. Using the data from Table 1 (third row from the bottom), a diagram was constructed resembling in form that

[4] The coefficient R^2 is defined as the percentage of the variability in the data explained by the model: $R^2 = 1 - SSE/SST$, where SSE is the so-called residual variance and SST the total variance of the data.

of Fig.1. Despite certain deviations, involving in particular blue, grey and yellow, the similarity of the evolutionary (Fig.1) and frequency (Fig.3) schemes is striking. It proves that there is a strong correlation between, on the one hand, the chronological order of appearance of basic colour categories in the phylogenesis of language and, on the other, the frequency of those categories in the modern languages, as expressed by the total frequencies of appropriate salient terms. This fact is the more significant in that the sequence presented in Fig.3 is based on Indo-European languages only, while Berlin and Kay's sequence results from the study of languages representing various groups and / or language families as well as different cultural and natural environments. According to this argumentation, 'old words' should be more frequently used and more semantically charged than 'new' ones (Steinvall 2002:66-67). Assuming the validity of this relationship, this inference could also be reversed, for instance when applied to other semantic fields: the most frequent and functionally charged elements of a given semantic field would, most probably, be the oldest ones.

$$\begin{bmatrix}\text{white } 24.3\%\\ \text{black } 21.7\%\end{bmatrix} \rightarrow [\text{red } 14.5\%] \rightarrow \begin{bmatrix}\text{blue } 11.2\%\\ \text{green } 10.4\%\end{bmatrix} \rightarrow \begin{bmatrix}\text{grey } 5.8\%\\ \text{yellow } 5.1\%\end{bmatrix} \rightarrow [\text{brown } 3.6\%] \rightarrow \begin{bmatrix}\text{pink } 2.0\%\\ \text{violet } 0.7\%\\ \text{orange } 0.5\%\\ \text{purple } 0.3\%\end{bmatrix}$$

Figure 3: *Frequency-based sequence of colour categories*

3.5 *Coverage of the semantic field of colour in texts*

Surprisingly, just two basic colour categories (WHITE and BLACK) account for nearly 50% of all the colour terminology in texts, while seven categories account for more then 90% (Fig.4). Thus the semantic field of colour can be entirely covered with relatively few basic terms. This fact is particularly interesting seeing that colour terminology in the languages studied is very rich. For instance, for Polish, Tokarski lists 182 colour terms and / or designations (Tokarski 1995:239–242).

The high and uneven frequencies of a very limited number of colour terms are most probably the consequence of the principle of least effort in language. They also show how far advanced the specialization of colour terminology is (the analysis of collocations would provide more detailed information here). The observed quantitative structure of the semantic field of colour is also consistent with the semantic theory of prototypes (Rosch 1975; 1978). A prototype can be defined either as a reference object or as a general concept, representative of a class of concepts or objects (Taylor 1989:59). Very frequent appearances of

certain colour categories, regarded as basic, would suggest a prototypical status with regard to the encoding of the whole colour space.

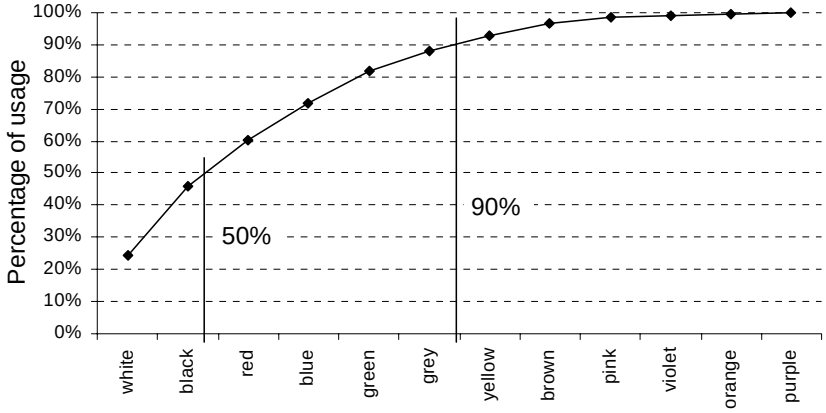

Figure 4: *Coverage of the semantic field of colour (mean values for ten languages)*

The above argumentation relative to the theory of prototypes can be exemplified by the category RED. According to Wierzbicka (1990), the material prototypes of RED would be fire and blood. However, treated in an abstract manner, focal RED would be a conceptual prototype for all the red-based hues ('warm colours'), as denoted by those semantically specialized colour terms, which often have restricted collocations and appear in texts with low frequencies. This would apply, for example, to *carmine, scarlet* and *crimson*.

4. *Discussion and conclusions*

The main purpose of this paper is to present a methodology for quantitatively evaluating the masses of data currently, and in future, obtainable from language corpora (cf. also Steinvall 2002:65-95). The methodology was found to operate satisfactorily and to provide results for study and evaluation. After this test case, it is hoped to apply the methodology to fully representative and comparable corpora in several languages, especially the less frequently used examples, and to future corpora, as and when they become available. Although the results currently presented are of interest, it is readily agreed that readers will need to bear in mind the differences between the selection of textual material in the corpora used. The other problem which is not tackled here is the semantic correspondence, or lack of it, of colour categories in different languages.

When interpreting the empirical findings, efforts were made to avoid the methodological error of expecting a clear result in favour of either relativism or universality in the conceptualization of colour. In my opinion, an unambiguous settlement of this question is impossible, because the distinction between universality and relativism is fluid. Consistent with this argumentation, quantitative explorations of colour categories evidenced in various languages allowed the writer to discard the hypothesis of extreme universality in the conceptualization of the colour space and, *a fortiori*, of any other semantic field (as a result of the *chi*-square test). On the other hand, the results also contradict the relativistic approach to the conceptualization of colour (as a result of the rank correlation test). The most satisfactory conclusion, derived from the analysis of several genetically and culturally related languages, is one of moderate universality in the conceptualization of colour. This is demonstrated both by the result of the rank correlation test and by the estimation of a functional model describing the quantitative structure of the semantic field. This structure is basically determined by the principle of economy in language. Most probably the same factor shapes the frequency distribution of other semantic fields (Pawłowski 2006). It should also be stressed that the frequency model of colour categories produced similarly ordered results to that of Berlin and Kay's evolutionary sequence, which indicates that there exists a specific imprinting of a language's history in its quantitative structure (Steinvall 2002:71-72).

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ČSRJ. Zasorina, L. N., ed. 1977. *Častotnyj slovar’ russkogo jazyka* [Frequency Dictionary of Russian]. Moscow: Izdatel’stvo Ruskij Jazyk.

ČSSUXP. Darčuk, N. P., V. I. Krtska, M. P. Muravic’ka, L. V. Orlova & V. S. Perebijnis, eds. 1981. *Častotnyj slovnyk sučasnoji ukrajins’koji xudožn’oji prozi* [Frequency Dictionary of Contemporary Ukrainian Artistic Prose]. Kiev: Naukova Dumka.

FDFW. Juilland, A., D. Brodin & C. Davidivitch. 1971. *Frequency Dictionary of French Words*. The Hague: Mouton (French 1).

FDRW. Juilland A., P. M. H. Edwards & I. Juilland. 1965. *Frequency Dictionary of Rumanian Words*. The Hague: Mouton.

FDSW. Juilland, A. & E. Chang-Rodriguez. 1964. *Frequency Dictionary of Spanish Words*. The Hague: Mouton.

FSS. Mistrík, J. 1969. *Frenvencia slov v slovenčine* [Word Frequency in Slovak]. Bratislava: Vydavateľstvo Slovenskej Akadémie Vied.

FSSDTČJ. Jelínek, J., J. V. Bečka & M. Těšitelová. 1961. *Frekvence slov, slovních druhů a tvarů v českém jazyce* [Frequency of Words, Grammatical Classes and Linguistic Forms in Czech]. Prague: Státní Pedagogické Nakladitelství.

LFLIC. Bortolini, U., C. Tagliavini & A. Zampolli. 1971. *Lessico di frequenza della lingua italiana contemporanea*. Milan: Garzanti.

SFPW. Kurcz, I., A. Lewicki, J. Sambor, K. Szafran & J. Woronczak. 1990. *Słownik frekwencyjny polszczyzny współczesnej* [Frequency Dictionary of Contemporary Polish]. Krakow: Polska Akademia Nauk, Instytut Języka Polskiego.

VRFDF. Engwall, G. 1984. *Vocabulaire du roman français (1962–1968): Dictionnaire des fréquences*. Stockholm: Almqvist & Wiksell International (French 2).

Appendix

Colour terms in the languages studied

Czech: white – *bílý*; black – *černý*; red – *rudý, červený*; green – *zelený*; yellow – *žlutý*; blue – *blankytný, modrý, tmavomodrý*; brown – *bronzový, hnědý*; purple – *purpurový*; pink – *růžový*; orange – *oranžový*; grey – *šedý, šedivý, šerý*; violet – *fialový*.

English: *white, black, red, yellow, green, blue, brown, purple, pink, orange, grey, violet*.

French: white – *blanc*; black – *noir*; red – *rouge*; green – *vert*; yellow – *jaune*; blue – *bleu*; brown – *brun, marron*; purple – *pourpre*; pink – *rose*; orange – *orange*; grey – *gris*; violet – *violet*.

Italian: white – *bianco*; black – *nero*; red – *rosso*; green – *verde*; yellow – *giallo*; blue – *celeste, azzuro*; brown – *marrone, castano, bruno*; purple – *purpureo, scarlatto*; pink – *rosa*; orange – *arancio*; grey – *grigio, bigio*; violet – *viola*.

Polish: white – *biały*; black – *czarny*; red – *czerwony*; green – *zielony*; yellow – *żółty*; blue – *niebieski, błękitny, granatowy*; brown – *brązowy, brunatny*; purple – *purpurowy*; pink – *różowy*; orange – *pomarańczowy*; grey – *szary*; violet – *fioletowy*.

Rumanian: white – *alb*; black – *negru*; red – *roşu*; green – *verde*; yellow – *galben*; blue – *bleu, albastru, azuriu*; brown – *brun*; purple – *purpuriu*; pink – *trandafiriu*; orange – *oranj*; grey – *gri, inchis*; violet – *violet*.

Russian: white – *белый*; black – *чёрный*; red – *красный*; green – *зелёный*; yellow – *жёлтый*; blue – *голубой, синий, блакитний*; brown – *бронзовый, бурый, коричневой*; purple – *пурпуровый, багровый, алый*; pink – *розовый*; orange – *оранжевый*; grey – *серый*; violet – *фиолетовый*.

Slovak: white – *biely*; black – *čierny*; red – *červený*; green – *zelený*; yellow – *žltý*; blue – *belasý, modrý*; brown – *hnedý, bronzový*; purple – *purpurový*, pink – *ružový*; orange – *oranžový*; grey – *šedý, šedivý, šerý*; violet – *fialový*.

Spanish: white – *blanco*; black – *negro*; red – *rojo*; green – *verde*; yellow – *amarillo*; blue – *azul*; brown – *castaño, marrón*; purple – *purpúreo*; pink – *rosa*; orange – *anaranjado*; grey – *gris*; violet – *violeta*.

Ukrainian: white – *білий*; black – *чорний*; red – *червоний*; green – *зелений*; yellow – *жовтий*; blue – *голубий, блакитний, синій*; brown – *бронзовий, бурий, коричневий*; purple – *пурпуровий багряний*; pink – *рожевий*; orange – *оранжовий*; grey – *сірий*; violet – *фіолетовий*.

BASIC COLOUR TERMS AND TYPE MODIFICATION
MEANING IN RELATION TO FUNCTION, SALIENCE AND CORRELATING ATTRIBUTES

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1. *Introduction*

Imagine a glass of lovely Sauternes, the sweet dessert wine of Bordeaux. In its early days the wine had "a lemon gold colour, but […] as it ages, this wine deepens, turning a rich, golden amber," and so it appears in the glass.[1] Would anyone hesitate to call this wine white? No, certainly not – it is a white wine. No one would, however, call this nuance white if given a Munsell chip. Yet very few speakers of English would feel that there is a contradiction in the claim that a white wine could have a golden amber nuance despite the fact that *amber* and *golden* are not hyponyms of *white*. The answer to this apparent paradox, I believe, lies in the fact that we are here dealing with two different functions of the colour terms, description and classification (or type modification).

This scenario illustrates the importance of taking a wide picture into consideration in the study of colour semantics.[2] Apparently, there is more to colour meaning than is suggested by the mapping procedures of Munsell chips. As pointed out by Lyons (1999), context-free mapping is nominal in character (second-order referential use) and not adjectival (first-order attributive or descriptive use). Indeed, colour words are frequently mentioned as prototypical members of the adjectival category, and those languages which have a closed class of adjectives tend to include basic colour terms among these (cf. Dixon 1982; Siegel 1980).

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[1] The description of Sauternes was obtained at www.thewinedoctor.com/advisory/tastetastingwine.shtml, accessed on 18 January, 2005.

[2] I am very grateful to Carole Biggam for suggestions and comments on an earlier draft of this paper. All opinions and remaining mistakes are, of course, my own.

In this study, I discuss one kind of attributive use of colour terms, type modification, whose character has so far been overlooked in colour semantics. My main purpose is to demonstrate that acknowledging the fact that different attributive functions can be performed by colour terms may provide colour semanticists with a powerful tool for modelling phenomena that have not hitherto been accounted for. The paper starts with a short description of attributive functions of colour terms in English and a summary of a study of two English corpora. In the second part, I discuss a theoretical model for the phenomenon of type modification in relation to the notion of salience. In the third and final section, a link between type modification and polysemous colour terms is discussed in the context of a review of Conklin's (1964) classic study of Hanunóo colour terms.

2. Colour terms and type modification in two English corpora

Several researchers (for example, Teyssier 1968; Warren 1984) have observed that adjectives may take on three different functions in attributive positions in English: identification, description and classification. In the context of colour terms, these can be illustrated by the corpus examples below.

(1) I was curious and wanted to know who suggested *the white dress* and the mules for the front cover of the classic Parallel Lines album; *the canary yellow dress* in the Picture This video and the mirror shades for the Union City Blue video. (*Bank of English* corpus (*BoE*): UK magazines)

(2) Julia, looking lovely in *a clingy maroon dress*, arrived arm in arm with Rupert Everett, her co-star in the hit movie My Best Friend's Wedding. (*BoE*: *The Sun* newspaper)

(3) "I was out in the garden recently," he recalled, "looking around at these huge shrubs and thinking how some of them ought to be moved - just to give the others room - and I got to thinking about that *blue spruce*. It's magnificent now and just gigantic." (*BoE*: UK books)

Example (1) illustrates how the colour adjective helps to point to one particular instance of the noun, thus distinguishing this instance from other possible targets. In this sense, its function is close to that of the definite article. Teyssier (1968) identifies a number of adjectives that prototypically have this function (for example, *right* (not left), *first* and *only*), but all *bona fide* adjectives can be used for this purpose.

In example (2) we find an instance of description. Here the purpose is to draw attention to some property of an instance of the noun, in this example its colour. Accordingly, it is not the entity itself that is the focus of attention. In both description and identification, the interest is focused on instances, and the modification can be said to take place on an instance plane.

When we deal with the third type, classification, it is clear that we are concerned with modification at a different level. Here the purpose of modification is to create a subclass of the noun, thus restricting its reference. A blue spruce, as in (3), is one specific type of spruce. This kind of modification is more abstract, and, following Langacker (1999), we can distinguish between two planes of reference, type plane and instance plane, where the former is abstract, lacking the quantification and specification of the latter. Classificatory use of adjectives represents type modification. Whereas any colour term can be used for description and identification, it appears that only the most basic terms are regularly employed for type modification. In Figure 1, I present the results from two corpus studies of English which demonstrate a close correlation between type modification and colour term basicness.

In Steinvall (2002), I studied two language corpora of different kinds, to try to establish patterns for type modification. I give here a brief summary of the results. First the *Oxford English Dictionary* (*OED*) was studied and all colour collocations with their own entry were listed, compounds as well as adjective-noun phrases.[3] Included were only those phrases listed in bold face type accompanied by some explanation; examples given in italics were excluded. In order to do this, I searched on definitions and later manually refined the material. The close resemblance between adjective-noun compounds and instances of type modification is discussed in Steinvall (2002). Figure 1 shows the number of instances of type modification found for English colour terms.

A rank correlation test showed that there is a significant correlation between the order of the Basic Colour Terms (BCTs) in Figure 1 and their evolutionary hierarchy as suggested by Berlin and Kay (B&K) (1969): $r_s = 0.893$, $p < 0.01$. Figure 1 also reveals that there is no distinct line between BCTs and non-basic terms. *Silver*, *golden*, *rose* and *scarlet* occur more often than some basic terms. Most notable is the fact that *rose* is far more frequent in phrases exhibiting type modification than is *pink*, despite their present-day

[3] I used the *OED* online and included the 1993 and 1997 additions. The *OED* was accessed in 1999-2001 for the results presented in Figure 1 and in October-December 2004 for the results presented in Figure 6.

hyponymous relation where *pink* is the basic term and *rose* a kind of PINK. This apparent paradox will be addressed below.

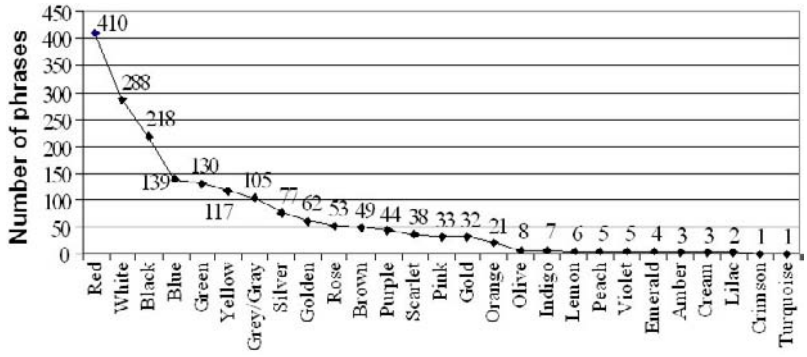

Figure 1: Instances of type modification of colour terms in the OED (Steinvall 2002:112)

The *OED* material represents more or less lexicalized phrases, where we find compounds and type modification particularly in natural domains. Typically, colour words are used to create sub-types of trees, fruits, animals and minerals: two such examples are presented in Figures 2 and 3.

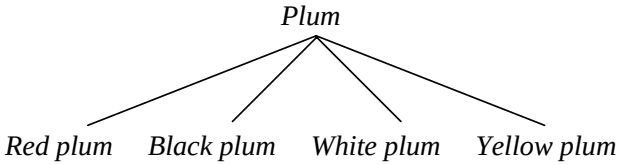

Figure 2: Type modifications of plum in the OED

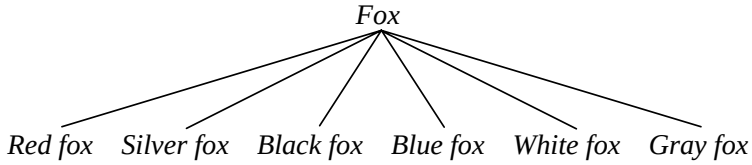

Figure 3: Type modifications of fox in the OED

These examples illustrate that colour is a regularly used attribute for name giving, as it represents a property which can be accessed at a distance. Moreover, it has high information value because the named property is often highly conspicuous. That colour is a common attribute in names for fungi across languages was shown by Persson (2000). In this context, it is important to stress that the *OED* represents language usage and not a scientific perspective. The two hyponymies above are, therefore, not at all to be equated with biological taxonomies. On the contrary, *silver fox* and *black fox* are names for the same species, also called the red fox (*Vulpus fulva*); *blue fox* and *white fox* are two names for the arctic fox (*Alopex lagopus)*. In all cases, the classifications represent the various colorations of these species. To my mind, this illustrates the weight given to the attribute of colour in folk taxonomies. Although type classification in its lexicalized state, represented by the *OED*, seems to be most common among natural categories, there are also artefacts sub-classified on the basis of colours. The best known case is of course wine, but many other examples exist, for example *white* and *brown bread*, *white* and *brown envelopes*, and *white, blue* and *pink collar workers*.

To balance this perspective and to get a more contemporary view reflecting language usage, I used a language corpus of present-day English (*The Bank of English* (*BoE*)) for a study of the most frequent colour adjective-noun collocations. The Bank of English is a very large monitor corpus owned by Collins COBUILD, a division of HarperCollins Publishers. The full corpus was accessed in February to June 1998. For details regarding the methodology and a full description of this corpus, see Steinvall (2002). Because type modification represents the creation of a sub-category, it can be assumed that such phrases may turn up as the most frequent collocations in a language corpus. In this study, I looked at the thirty most frequent collocations for fifty English colour terms; in Figure 4, the number of type modifications among those thirty collocations is presented. As in the case of the *OED* data, basic terms occur much more often with this kind of reference than non-basic terms, although there is no clear-cut boundary between the two categories. There is also a significant correlation between the order of the colour terms and the B&K sequence: $r_s = 0.843$, $p < 0.01$.

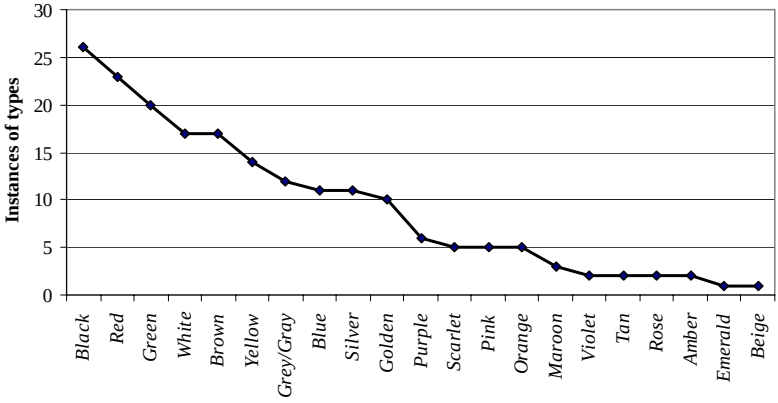

Figure 4: The number of type modifications among the thirty most frequent colour adjective-noun collocations in the Bank of English

(adapted from Steinvall 2002:118)

3. Type modification and its relation to basicness: a theoretical account

How can the correlation between basicness and type modification be explained? There appear to be two possible explanations, which could be linked to one another, salience and history.

As far as salience is concerned, it is important to distinguish between onomasiological and semasiological salience (cf. Geeraerts, Grondelaers & Bakema 1994; MacLaury 1997). The former refers to the salience of a linguistic form (‘a name’), whereas the latter refers to the salience of a concept. It would seem that the combined salience of these two perspectives can promote the effects we see, in terms of both frequency (correlation with the B&K sequence), and the size of the named area. Although type modification frequently involves objects whose nuances are close to the focus of a category, as in *brown bear*, there are many examples where the nuance appears to be outside the area designated by the colour term in isolation: red hair is often orangeish, the skin of white people is certainly not white, and the blue spruce has a greyish-bluish green colour, which in the context of an evening gown could perhaps be called *teal*. The salience of the term *blue* makes it a much better candidate for naming than *teal*, which some speakers may not be familiar with, and whose nuance may be unclear to others.

At a deeper level, further elaboration is possible; the close connection between the basicness of a colour term and its use in type modification could be modelled as a kind of reference-point phenomenon. Langacker (1999:173) defines a reference-point phenomenon as "the ability to invoke the conception of one entity for purposes of establishing *mental contact* with another, i.e. to single it out for individual conscious awareness". In short, it means that we access a target of low cognitive salience via a much more salient reference point. As was noted earlier, colour as a visible attribute is salient in comparison with other potential attributes for naming. Moreover, the salience of the colour domain is unequally distributed, with some nuances being much more salient, namely the so-called focal colours, usually named by basic colour terms. These, then, can serve as suitable cognitive reference points for less salient nuances (targets) characteristic of types of things (for example, wine, spruces, and humans). It should also be borne in mind that the objective is not to access a nuance *per se*, but an object which constitutes a sub-type of some other category, among the members of which the colour attribute is characteristic but may have considerable variation. Accordingly, a salient colour concept is to be preferred.

Langacker also emphasizes the importance of the vantage point of the conceptualizer.[4] Depending on the vantage point, different reference points may be suitable for accessing the target. When naming takes place, it is done from a mental vantage point in the colour domain. Figure 5 is intended to illustrate this in a highly schematic way. Representing the blue and green area of a Munsell chart, it tentatively shows how the colour domain is unequal in terms of semasiological salience, the peaks representing the focal nuances for English GREEN and BLUE. The height is only meant to be suggestive of the salience of the focal colours; the issue of whether that salience is perceptually, cognitively or otherwise grounded (Jameson & Alvarado 2003) is not crucial for the modelling of reference points.

In the case of the type modification of colour terms, we can assume that the vantage point is the commonest colour in the domain concerned – in the domain of plants presumably green (contextual knowledge). Access is then made to the attribute of the sub-type in question via the salient concept. Since the focus is distinction (distinguishing a sub-category from the main category) it is possible

[4] In the context of colour semantics, the notion of vantage is closely associated with Robert MacLaury's Vantage Theory (for example, MacLaury 1997). Langacker's conception of this construct is similar, but the application is different. My use of vantage point draws on Langacker's theories.

to let the boundaries of the named category expand (for instance to permit BLUE to expand into the area of GREEN) for the categorization to take place. In the case of the blue spruce, the weak bluish tinge is the focus and motivates the name despite the stronger green element: we do not expect blue spruces to have the colour of the summer sky. Consider also how blue such a tree appears when close to an ordinary green spruce, or any other green tree. In the same way, we find *white spruce* and *black spruce*, the former also having a bluish green tinge but decidedly paler than that of blue spruce, and the latter having a darker foliage than other spruces. Thus, the focus of attention in the former case is the increased paleness which makes white a suitable reference point. It seems that this kind of modelling may explain many kinds of type modification where colour terms have a wider reference than in, for instance, a mapping procedure with Munsell colour chips.

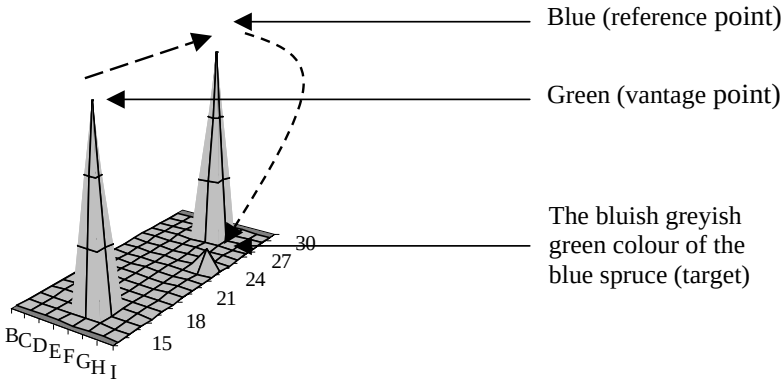

Figure 5: The naming of blue spruce modelled as a reference point phenomenon in the colour domain (adapted from Steinvall 2002:128)

From a historical perspective, the issue of onomasiological salience is important. This is apparent if we return to the results of the corpus studies. There was a distinct difference between the two studies with regard to *pink* and *rose*. The *OED* study showed a higher frequency for *rose*, whereas the *BoE* study gave *pink* a more prominent position. However, if we look at the distribution of the instances of type modification in the *OED* with respect to the first recorded date of an instance, we get the picture presented in Figure 6.

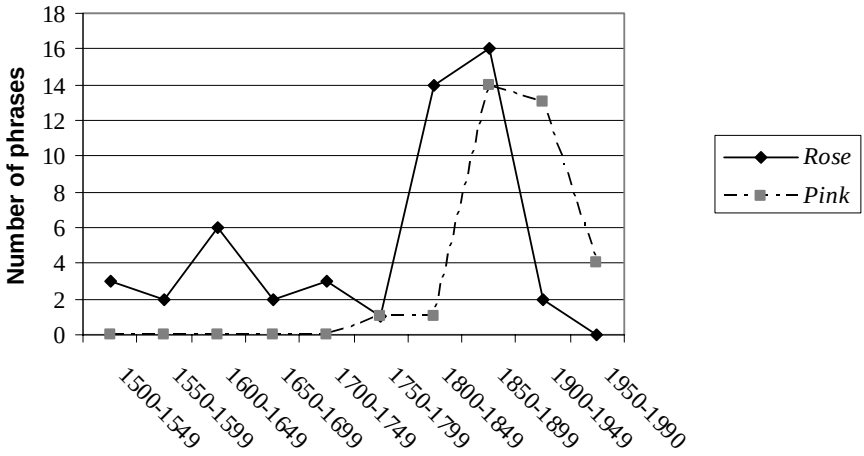

Figure 6: Distribution of type modification involving rose and pink in the OED[5]

It seems that *rose* was initially the more salient term (the first recorded instance of *pink* in its colour sense, and in descriptive use, in the *OED* is from 1720), but from the middle of the nineteenth century it would appear that there was a change in onomasiological salience with respect to the colour domain. The apparently low frequency of type modification after 1950 is probably due to the *OED* corpus. More recent expressions representing type modification such as *pink jersey* (referring to the leader of the *Giro d'Italia*) and *pink pound* (referring to homosexuals as an economic group), both found in the *BoE* corpus, were not listed in the *OED* at the time of this study. The very rapid decline of *rose* in the twentieth century with regard to type modification is also reflected in the overall low frequency of the term. Steinvall (2002) reports some 600 instances of *rose* in a colour sense, but more than 8,000 for *pink*. The study of type modification in the *OED* suggests that, in the nineteenth century, the two terms were in competition for naming items in the pink area. For some reason, *pink* was favoured and is now regarded as a basic colour term by most researchers. The fact that type modification is frequently lexicalized, and, therefore, may constitute a kind of fossil, makes it difficult to see this type of change in a purely synchronic study. Lexicalized phrases and other instances of type modification may promote the frequency of a term (its onomasiological salience) in some domains.

[5] The *OED* gives no dated citations for *rose box*, *rose garnet*, *rose glass* and *rose opal*.

A parallel phenomenon to what took place between *pink* and *rose* in the nineteenth century could be going on in French, where *brun* and *marron* are in contention (Forbes 1979; 1986; Spence 1989; Schäfer 1999). *Brun* is frequently used for type modification; there are phrases such as *bière brune, tabac brun* and *ours brun* where it would not be possible to use *marron*. However, most of these phrases (if not all) were lexicalized long ago, and do not reflect the present onomasiological salience of the term. Schäfer (1999:98) points out that the relationship between *brun* and *marron* is similar to that between *blond* and *jaune*, in that both *blond* and *brun* are used in set phrases, that is in instances of type modification. For descriptions of, for instance, clothes or cars, *marron* and *jaune* are preferred. According to Forbes (1986), *marron* is the more salient of the two terms in most dialects, and therefore seems a likely candidate to be used in new instances of type modification. One example of this could be the phrase *ceinture marron*, referring to a belt worn by a student of judo or karate who has reached a certain grade. The presence of older phrases such as *chemises brunes* meaning "Nazis" indicates that the choice of term is not a matter of the domain of the noun, and that time and change of salience could be crucial factors.

To sum up, it seems that both types of salience, onomasiological and semasiological, are relevant to the understanding of how a colour category is used for type modification.

4. Type modification and colour term reference outside the colour domain

In the final section of this article, I will discuss a feature of colour terms which, I think, could be linked to type modification – the fact that they frequently evoke other domains. Some researchers view such phenomena as instances of polysemy (Kay 1999), whereas others are doubtful. In the case of non-basic terms (and occasionally basic ones too) this phenomenon is due to the fact that the colour word is derived from some object, for example English *turquoise, lavender* and *silver*. However, there are also other kinds of references outside the colour domain which cannot be explained in this way. The discussion is not trivial as it is one of the cornerstones of the critique of the methodology employed in the World Colour Survey and elsewhere, namely that a more complex idea of colour terms has been reduced to the dimensions of hue, brightness and saturation (for example, Lucy 1997; Saunders & van Brakel 1997; Lyons 1999). The most celebrated example referred to by the critics is Conklin's (1964) study of Hanunóo colour terms. In this language, the terms *malatuy* and *marara*ʔ not only mean "green" and "red", but also evoke meanings of "succulence" and "desiccation" respectively. Conklin writes:

> [T]here is an opposition between dryness or desiccation and wetness or freshness (succulence) in visible components of the natural environment which are reflected in the terms *rara*ʔ and *latuy*, respectively. This distinction is of particular significance in terms of plant life. Almost all living plant types possess some fresh succulent and often "greenish" parts. To eat any kind of raw, uncooked food, particularly fresh fruits or vegetables is known as *pag-laty-un* (<*latuy*). A shiny, wet, brown-colored section of newly cut bamboo is *malatuy* (not *marara*ʔ). Dried out or matured plant material such as certain kinds of yellowed bamboo or hardened kernels of mature or parched corn are *marara*ʔ. (Conklin 1964:191)

The issue here is whether *malatuy* has two meanings, "succulence" and "greenness" (the latter in the sense of green as a focal colour), and is polysemous, or whether the meanings are so intertwined that *malatuy* has to be considered monosemous, that is having one meaning. Lyons favours the second interpretation. Discussing the Greek colour term *khlôros*, he claims that:

> [t]he color term sense of *khlôros* is inseparable from its more general sense in which it is used typically, to describe fresh green foliage. […] In this respect it is similar to, though it may not match exactly, the Hanunóo word, *malatuy*. Like the latter, it can be used to describe plants, fruits and other things that are yellow (or yellowish), rather than green in color. But when it is used referentially…, it can be very plausibly said to have BK-green as its focal, or prototypical, denotation. (Lyons 1999:60)

It could be that the notion of type modification can accommodate these facts into a general theory of colour terminology. Let us first address the colour domain itself and the fact that *malatuy* is used for a fresh, wet, brown-coloured newly-cut piece of bamboo despite the colour of the item being closer to *marara*ʔ, judging by the colour nuance alone. This could be explained by the classifying function of type modification. Conklin's text suggests that what is at stake here is a classification of two kinds of bamboo (or other plants).

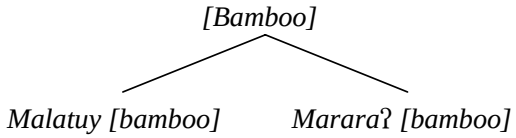

Figure 7: Hanunóo sub-classification

Precisely as in the case of blue spruce, we can assume the classificatory process to be a reference-point phenomenon. In the case of the conspicuous classification of brownish newly-cut bamboo as *malatuy*, it can be hypothesized that the vantage point is that of *marara*ʔ, the yellow, dried-out material (bamboo or some other plant) against which the contrast is intended. From this vantage

point, *malatuy* "green" should be the best candidate for naming the category, given the small number of basic colour terms. Fresh bamboo usually has some greenish spots which, together with the association of succulence, should favour this classification, despite the dominating (brown) nuance of the object. Thus, the focus on distinction permits the *malatuy* category to expand into colour nuances which may not be designated in this way in isolation. However, given the knowledge of the domain of plants possessed by the Hanunóo, the naming of the nuance for this classification is no bigger problem than are the actual nuances of blue spruces and white wine to us.

The second issue, whether wetness and dryness are inseparable dimensions of these colour terms, is difficult to analyze in detail given the scarce material at hand. It is quite clear, however, that in the case of type modification it is not unusual that several attributes correlate. As to Hanunóo, the classification of plants on the basis of colour terms correlates with other dimensions, as is evident from the quotation above. But is this so different from patterns found in English? Not at all. Type modification in some domains in English will also correlate several attributes. This is true not least in the domain of fruit. Consider (4) below.

(4) The banana industry had a very good case which would stand up to scientific scrutiny, Dr Muirhead said. Dr Muirhead said international literature searches showed *green bananas* were not a papaya fly host although ripe bananas were. (*BoE*: Australian newspapers)

In this example the contrast between *green* and *ripe* indicates that *green* here carries the principal meaning of "unripe", in addition to that of a colour nuance. When such a correlation is manifest across a large domain, such as fruit or plants, it is possible that the two attributes become closely linked, and that, through a metonymic process, one attribute can stand for the other. As colour is an attribute accessible at a distance, it is more likely to be a candidate representing an inner and partly abstract quality than *vice versa*. This kind of metonymy is represented in (4).

The Hanunóo example is just one illustration of a close co-occurrence between colour attributes and other attributes. Other recent examples in the literature are Berinmo (Roberson, Davies & Davidoff 2000) and Yélî Dnye (Levinson 2000) where what appears to be type modification of a colour term also correlates with other dimensions.

The issue of polysemy and monosemy is, however, a delicate one. Tuggy (1993) suggests that there is a continuum between these two notions and that a clear distinction is difficult to uphold. However, in cases such as English, where

green can be mapped onto other domains, for example that of people, in the sense of "unripe / immature" or "inexperienced", as in (5), we can definitely argue that polysemy has been established.

(5) LORD POLONIUS:
Affection! pooh! you speak like *a green girl*,
Unsifted in such perilous circumstance.
Do you believe his tenders, as you call them?
(*Hamlet*. I. iii. 101-103)

On the basis of the evidence available, no clear conclusion can be drawn for Hanunóo. What can be established, I think, are two things: first, the correlation of attributes (for example, greenness and succulence) presupposes a classificatory use of the terms comprising the two attributes; second, the colour sense is the fundamental one, as the basic terms (*malatuy*, *marara*ʔ, and so on) are apparently also used for items such as beads and clothing, where they only have a colour sense.

5. Conclusion

The purpose of this article has been to demonstrate the importance of recognizing the fact that colour terms may have different functions in discourse. It has been argued that the abstract function of type modification, or classification, can be fruitfully explored in the description of colour systems. Two corpus studies of English show that the use of a colour term in type modification correlates with the sequence of Basic Colour Terms. There was, however, no clear-cut boundary between basic terms and non-basic terms. It was suggested that semasiological as well as onomasiological salience could be important factors for type modification. A switch between *pink* and *rose* for type modification in the history of English seems to verify the importance of onomasiological salience. It was further proposed that unorthodox instances of colour terms (*white wine*, *blue spruce*) invariably represent type modification and could be modelled as reference-point phenomena. Colour categories with foci of high semasiological salience would make excellent reference points. It may very well be that type modification of colour terms could be part of an explanation for the association of other attributes with colour terms found in many cultures. A new look at Hanunóo colour terms indicates that type modification could have potential explanatory power. If I may end this article on a speculative note, I think one could hypothesize that type modification could be the first stage of colour usage in the development of a colour lexicon. As descriptive function is concerned with the colour nuance, it presupposes that

the object itself is of less importance at the point of discussion. This, in turn, almost certainly suggests that the object is some kind of artefact available in various nuances. Circumstantial evidence for this is the development of a rich colour terminology in European languages, which took off in close connection with the development of the modern dyeing industry (Casson 1994).

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BEYOND COLOUR
MODELLING LANGUAGE IN COLOUR-LIKE WAYS

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1. *Introduction*

Colour, in its various aspects, is of interest to psychologists, physiologists, anthropologists, linguists and others. In the present article I take a linguist's perspective and attempt to contribute, not to colour studies as such, but to a coherent account of the behaviour of speakers in naming colour and in other aspects of language use. Specifically, I propose to analyze one particular sample of language data, the use of articles in an English written text, within the framework of Robert E. MacLaury's (1997, 2000, 2002, 2003a, 2003b) vantage theory (VT), originally a model of colour categorization.

Previous attempts to do this include, among others, analyses of style (Aoyagi 1995; Adachi 2002), lexical semantics (MacLaury, Almási and Kövecses 1997; Głaz 2001; Taylor 2003; MacLaury 2003c), historical semantics (Winters 2002), number (Allan 2002), language learning (Pishwa 2002), writing systems (Stanlaw 2002), and aspect (Głaz 2002). In the present article I would also like to consider the problems of *adapting* VT to analyses of language, as well as to see what aspects of VT of a more general nature are the most appealing for the cognitive linguist.

2. *Major tenets of vantage theory*

It is difficult to present any theory in a nutshell; to do so with vantage theory is virtually impossible. At the most general level, this complex model holds that people draw a subconscious and instinctive analogy between the way they orient themselves in space-time and the way they construct categories. Spatio-temporal orientation involves plotting one's position relative to the spatial coordinates of up-down, left-right and front-back, functioning as a unitary frame of the human body, and including the mobile coordinate of relative motion. MacLaury (1997:143) quotes Einstein's classic example of a rock dropped from a moving train: its trajectory is straight for the person

throwing the rock but parabolic for someone standing by the track. The analogy between spatio-temporal orientation and colour categorization (the most comprehensive treatment of the issue is MacLaury 2003a) requires that the inherently fixed spatial coordinates and the relative value of motion be transposed into another domain. As a result, the inherently fixed coordinates are brightness, saturation or hue, and the inherently mobile coordinate is a reciprocally balanced attention, on the part of the viewer, to similarity or difference between colour stimuli.[1]

MacLaury conducted interviews mainly with speakers of Mesoamerican languages using the set of 330 Munsell colour chips. The interviews involved two kinds of procedure: naming and mapping. In naming, the interviewee was asked to name each of the chips shown to him or her in random order. The chips were then de-randomized into a colour chart and the range of each term was marked. In mapping, the person was presented with the de-randomized chart and asked to put a grain of rice on each chip he or she would name with a given term. Once finished, the same request was repeated until the subject insisted that all the chips had been marked. The procedure was then repeated for other terms.

In this way, speakers were found to be constructing specific configurations of categorial coordinates: the arrangements are called ‘vantages’. A vantage, in other words, is constructed when the conceptualizer perceives a category in a certain manner by focusing on at least one fixed coordinate, say hue, and treating other hues as similar, to a certain degree, to that primary focus. Figure 1 models a vantage on a hypothetical category ‘red’ (R stands for ‘red’, Sim for ‘similarity’ and Diff for ‘difference’).

Levels	**FIXED COORDINATES**	**MOBILE COORDINATES**	**Entailments**
1	R	Sim	focus, range
	↙		
2	Sim	Diff	margin (boundary)

Figure 1: *A vantage on a hypothetical category ‘red’ as modelled in vantage theory*

However, some categories require a more complex treatment. As an illustration, let us consider the ‘cool’ category in Zulu, a Niger-Kordofanian

[1] Similarity and difference are, in fact, two aspects of the same phenomenon: more of one is less of the other. However, it has become standard in vantage theory literature to explicitly refer to both.

language of South Africa (a detailed discussion is offered in MacLaury 2003b). The category covers the region of the hue spectrum denoted approximately by the English words *blue* and *green*. In Zulu the region is named with the blue-focused *hlaza* and the green-focused *kosazana*. Figure 2 presents the de-randomized results of a naming interview with a Zulu speaker. The rows of the Munsell array progress from darker (top) to lighter (bottom), whereas the columns organize different hues. (In this diagram, a two-dimensional rendering of the three-dimensional Munsell colour solid, the blue-green area is in the middle: the blue hue ranges approximately from columns 22-23 to column 30, and the green hue from column 13 to columns 22-23.)

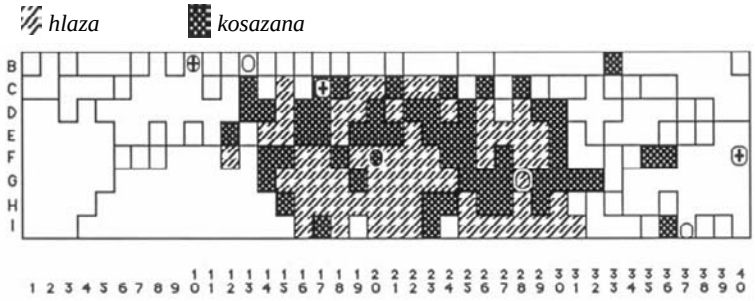

Figure 2: *The 'cool' category in Zulu. © Robert E. MacLaury. Obtained from the copyright holder and published with the permission of María MacLaury.*

Apart from a different focus, the regions covered by the two terms differ in the number of chips named (62 for *hlaza* and 56 for *kosazana*) and in their distribution (a span of 20 columns for *hlaza* and 25 for *kosazana*). The naming of *hlaza*, then, is more frequent and compact, that of *kosazana* being less frequent and more widely dispersed. A conclusion is drawn that each term expresses a different vantage of the category: *hlaza* names the 'dominant' vantage, *kosazana* the 'recessive' vantage. Table 1 summarizes the findings.

	DOMINANT *hlaza*	RECESSIVE *kosazana*
focus	blue (G28)	green (C17)
no. of chips named	greater (62)	smaller (56)
span	more compact (20 columns; mean of 3.1 chips per column)	more dispersed (25 columns; mean of 2.24 chips per column)
margin	closer to focus	further from focus

Table 1: *Differences between the Zulu 'cool' category terms* hlaza *and* kosazana.

The differences are aspects of observable and measurable linguistic behaviour of speakers, the entailments of hidden cognitions involved in the process of vantage construction. The construction of vantages of the 'cool' category in Zulu is modelled in Figure 3.

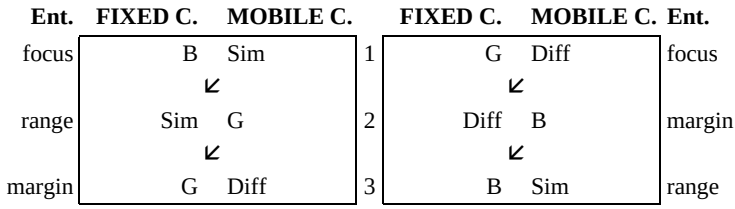

Figure 3: *Modelling of the Zulu 'cool' category in vantage theory.*
(C. = coordinate; Ent. = entailment)

The dominant vantage of the category is focused in blue: B is the primary fixed coordinate, the starting point for constructing a view of the category. Other hue stimuli are then compared to B: greater attention to similarity yields a greater range of the resultant category (level 2). However, as the category expands, at some point it encroaches on the green region (G), which results in the stimuli being seen as different from the ones encountered so far. The range of the category is curtailed and the category receives its boundary. This is the dominant vantage, *hlaza*. A different arrangement of the same coordinates results in a recessive vantage, *kosazana*, this time the category being focused in green (G). G is correlated with a stronger emphasis on difference: the boundaries of the category are established on level 1, and only as a result of this are the stimuli within them included in the category's range. Thus, we are dealing with two 'takes' on the category, the sum of which defines it.

The process of vantage construction can be seen as a sequence of figure-ground arrangements, the fixed coordinate on each level functioning as the ground, the mobile as the figure. On the next level, the mobile coordinate is 'fixated' to serve as the (back)ground for introducing another figure; it becomes known information so that new information can enter the stage. The act involves a change of coordinate status. For example, in the dominant vantage in Figure 3, when the inherently fixed coordinate G first appears at level 2, it can only do so in the capacity of a mobile coordinate (the figure). Prior to that, the inherently mobile Sim is 'fixated' on level 2, which enables the introduction of G. As the conceptualizer proceeds, he or she can only concentrate on one figure-ground arrangement (coordinate correlation) at a time. The others continue to play a role in the process but recede to the sub-conscious.

MacLaury (1997) illustrates the mechanism with the sentence *The newspaper is on the living room table*:

> [O]ne must locate the living room in relation to the house design, the table in relation to the living room, and the newspaper in relation to the table. One "zooms in" from a broad to a narrow purview by envisioning three relations of figure to ground: living room to house design, table to living room, and newspaper to table. As one narrows concentration through the three levels, one takes the figure from the broadest level to use as the ground on the next level. Thus, the living room is a figure in relation to the house design but a ground in relation to the table, which, in turn, is a figure in relation to the living room but a ground in relation to the newspaper ...
>
> In vantage theory, the newspaper on the living room table is a point of view constructed in reference to "fixed" and "mobile" coordinates. The house plan, living room, table, and newspaper are coordinates. They are "fixed" when thought of as a ground and "mobile" when thought of as a figure, even though they do not actually move. Rather, each figure is held in attention against an established background as a moving object would be regarded in relation to a stationary surround. Further, each figure can be moved to the next level of concentration where it is converted to established knowledge and thereby becomes a ground where, in relation to it, a new figure is introduced as the point of active interest. (MacLaury 1997:139-140)

The process of 'zooming-in' constitutes the very essence of orientation in space-time and of categorization. The analogy between the two is instinctive and rapidly expedited. Cognitive processes are deemed to be what they are regardless of the domain in which they operate: colour is the first and most exhaustively researched testing ground for vantage theory but it can be reasonably expected that other domains will only differ in details rather than fundamentals.

3. *A few problems*

If VT-based analyses of language are to yield satisfactory results, one must specify the nature and the details of two kinds of transposition: from categorization to conceptualization and from colour domain to language. The former is partially discussed by Allan (2002) in his article on number in English:

> [T]he grammar of number and quantification in English is exploited to reveal different points of view on the part of the speaker. The different points of view reflect different conceptualizations of what is spoken of ... VT has hitherto been a theory of categorization, not conceptualization; but if VT is to apply more generally to language meaning, I believe it must tackle conceptualization. (Allan 2002:684)

He then proposes his own version of VT, calling it VT2, and says:

> If VT is a theory of points of view which give rise to categories, VT2 is a theory of points of view embodied in conceptualizations. (Allan 2002: 687)

Allan analyzes expressions of the type *three giraffes* or *the herd are* (pluralizing usages) vs. *three giraffe* or *the herd is* (collectivizing usages). These conceptualizations, different points of view (different vantages), are modelled as tables consisting of several frames. Each frame, in turn, consists of a synthetic and analytic subvantage, the former focusing on similarity or aggregation, the latter on difference or separation. On the subvantage level, the synthetic subvantage is the dominant one, whereas on the higher level of vantages, the pluralizing usages are unmarked and hence dominant, the collectivizing ones being marked and hence recessive. Therefore, as Allan himself acknowledges, his model is in fact a new theory. But what if one would like to be more conservative and faithful to VT?

Even a cursory glance at the psychological literature reveals that the distinction between categorization and conceptualization is often merely terminological. Some sources seem to draw a rather close analogy between categories and concepts and even define the latter in terms of the former:

> A concept is a mental *category* that groups objects, relations, activities, abstractions, or qualities having common properties ... The instances of a concept are seen as roughly similar; for example, *golden retriever*, *cocker spaniel*, *weimaraner*, and *german shepherd* are all instances of the concept *dog*. (Wade and Tavris 1990:283; emphasis added)

> *Concept*: A way of *categorizing* items and demonstrating which items are related to one another. In a concept-learning task, certain attributes of the stimuli are related to one another according to a specified rule. (*EOP* 1994:I.284; emphasis added)

The parameters of brightness, saturation and hue can be seen as attributes, correlated with the rule of reciprocally balanced emphases on the similarities and differences between them.

In other sources it is possible to find formulations of striking similarity to the metalanguage of VT:

> *Concept generalization*: the process whereby concepts are widened to subsume classes. In valid concept generalization, the individual notes points of likeness and difference among the separate objects or experiences, and then tests by the method of varying the concomitants to check upon the logic of the common thread running through them. (*DOP* 1947:80; emphasis added)

The role of *likeness* and *difference* in the construction of concepts is thus parallel to that of *similarity* and *difference* in the construction of categories.

I will assume on this basis, albeit in a somewhat impressionistic manner, that categorization is an aspect, a facet or a mode of conceptualization. People conceptualize the world in many ways, one of which is a tendency to categorize it.[2]

The second transposition, taking a step outside the colour domain, requires specification of what might constitute the primary fixed coordinate for a conceptualization. In colour categorization the role is played by elemental colours, four chromatic (red, yellow, green and blue) and two achromatic (black and white). The chromatic elemental colours, i.e. elemental hues, are "points within unique hues [irreducible sensations of red, yellow, green, or blue] that the viewer experiences as being more intense than the others" (MacLaury 1997:516). The achromatic elemental colours are the two extremes of the black-to-white continuum, i.e. pure black and white. Some speakers call these 'jet black', 'snow white', 'fire-engine red', 'chrome yellow', 'kelly green' and 'true blue' (MacLaury 1997:516). But what corresponds to these in linguistically encoded conceptualizations?

My tentative answer is as follows: the starting point for a conceptualization is some kind of rudimentary mental image arising in the mind of the speaker. The answer is only tentative because elemental colours are perception-based and therefore universal but mental images are cognition-related and non-universal.[3] The former are universal in the sense of being experienced as "more intense" regardless of the linguistic or cultural background of the speaker, but obviously not in the sense of constituting the foci of all colour categories in all languages: these can even vary from speaker to speaker. Mental images, therefore, may be said to play the role of colour foci in categorial vantage construction rather than that of elemental colours. In other words, the construction of a vantage on a category, situation or scene must start from an entity which serves as the primary reference point for the whole process. In colour categorization, the selection of these entities (i.e. colour foci) is very much aided (though not determined) by the universal perceptual salience of elemental colours. In linguistic conceptualization, in turn, no such constructs are available. Therefore, mental images, which I claim play this role, are more

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[2] I owe this observation to a friend and colleague of mine, Przemek Łozowski, of UMCS, Lublin, Poland.

[3] I thank Bill Sullivan of the University of Florida and the University of Wrocław for drawing my attention to this fact.

difficult to designate and cannot be derived from experience in the same direct manner. However, the role of experience in their emergence is unquestionable. It remains to be specified if the characteristics of the two domains can be reconciled in a coherent manner within a single theory.

4. *Towards a VT-based analysis of discourse*

People can construe and describe a given situation in various ways (cf. Langacker 1991:ix). As a consequence of this superficially banal observation, VT postulates the existence of more than one vantage on a category. Hence the meanings of linguistic expressions are seen as subjective or subjectivized, i.e. dependent on and relative to the speaking subject, the conceptualizer. In other words, a person can view a scene from different angles and describe it accordingly, which says much about the scene but at least as much, if not more, about the viewer. The following analysis is to show how the viewing of an entity changes in discourse and how it is achieved by means of the use of articles.

Below is the opening fragment of Doris Lessing's (1985) novel *The Good Terrorist*:

> The house was set back from the noisy main road in what seemed to be a rubbish tip. A large house. Solid. Black tiles stood at angles along the gutter, and into a gap near the base of a fat chimney a bird flew, trailing a piece of grass several times its length.

For the sake of the analysis I propose to treat the passage as a closed, coherent whole.

In the passage, the object 'house' is referred to in two ways: first as *the house*, then as *a* (*large*) *house*. I propose to model the conceptualization of the building as a succession of three vantages, the first of which, vantage I, is presented in Figure 4.

	Levels	Fixed C.	Mobile C.	Cognitive entailments	Linguistic entailments
VANTAGE I (recessive)	1	House	Diff	focus; margin; distinctness	*The house was set back from the noisy main road in what seemed to be a rubbish tip.*
	2	Diff	Sim	singularity	

Figure 4: *Vantage I on 'house' in the passage from Lessing (1985)*

The vantage, and, by the same token, the conceptualization process as a whole, starts with a vague, 'image-like' conception of a house (the inherently fixed coordinate 'House'). In the first sentence, the definite article indicates attention to the distinct character of the building as something clearly delimited from its surroundings: *the noisy main road*, *a rubbish tip*. The vantage is recessive because stronger emphasis is placed on difference and so on the boundary between the house and its background. On level 2, Diff becomes a fixed coordinate: the boundaries and the distinctness of the house have already been established and are now taken as given. Diff is coordinated with Sim, which entails singularity, oneness of the house. In short, the building is viewed as a singular object, set against its background: *the house* is 'this house I am talking about'.

Then the word *house* is used with the indefinite article: the building is described as *large* and *solid*, as a homogeneous body. The distinct entity established in vantage I is viewed as a uniform structure of a certain type (member of a class).[4] This is achieved, on level 1 of vantage II, through emphasis on similarity (Figure 5).

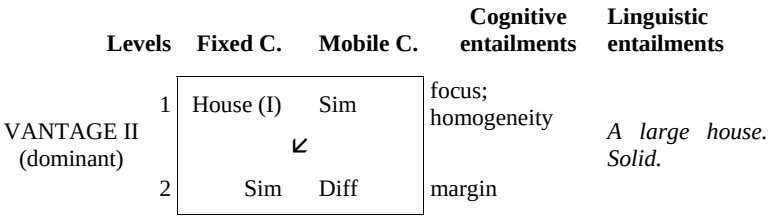

Figure 5: *Vantage II on 'house' in the passage from Lessing (1985)*

Thanks to the introduction of Diff on level 2 the image of the house does not extend indefinitely and overflow the conceptualizer's field of vision. But because more emphasis is placed on similarity, which appears at both levels of the vantage and contributes more to its value, the vantage is of the dominant type.

Vantages I and II start with different primary fixed coordinates, 'House' and 'House (I)', respectively. Vantage II, as it were, 'inherits' its primary fixed

[4] The person who inspired me to consider the issue of correlating the VT-based analysis of this passage with a more traditional understanding of the English articles (*the*: this one, *a*/*an*: one of) is Elisabeth Okasha of University College, Cork.

coordinate from vantage I: in vantage II the process of conceptualization is ‘anchored’ in the entity established in vantage I.

As the text develops, the zooming-in process continues and the reader is presented with details: *black tiles, the gutter, a gap near … the base of … a chimney, a bird trailing a piece of grass*. Figure 6 models the fragment as vantage III.

It starts with ‘House (II)’, the primary fixed coordinate ‘inherited’ from vantage II (just as ‘House (I)’ in vantage II is ‘inherited’ from vantage I). ‘House (II)’ is correlated with emphasis on difference, entailing analyticity of viewing and more attention to details (*black tiles*, *the gutter*, *the base of a … chimney*, *a piece of grass*). Then, on level 2, Sim entails homogeneity of viewing and ensures that all the details are seen against the same background of the house, that they fall within the scope of the same entity. Because difference comes first and occurs on two levels, the vantage is recessive.

	Levels	Fixed C.	Mobile C.	Cognitive entailments	Linguistic entailments
VANTAGE III (recessive)	1	House (II)	Diff	focus; analyticity	*Black tiles stood at angles along the gutter, and into a gap near the base of a fat chimney a bird flew, trailing a piece of grass several times its length.*
	2	Diff	Sim	homogeneity of background	

Figure 6: *Vantage III on ‘house’ in the passage from Lessing (1985)*

The succession of three vantages, from recessive to dominant and to recessive again, is presented in Figure 7.

Although vantages I and III are both recessive, they produce different cognitive entailments because they are anchored to different starting points. Also, emphasis on difference may be directed at an entity’s boundaries (so that it is seen as distinct from the background, vantage I) or at its internal structure (so that more details within it can be observed, vantage III).

To recapitulate, vantage I concretizes and establishes the boundaries of an initially abstract conception, vantage II attributes homogeneity to the conception and vantage III concentrates on details within this body. The vantages do not merely follow one another but each of them ‘feeds’ the one that comes next.

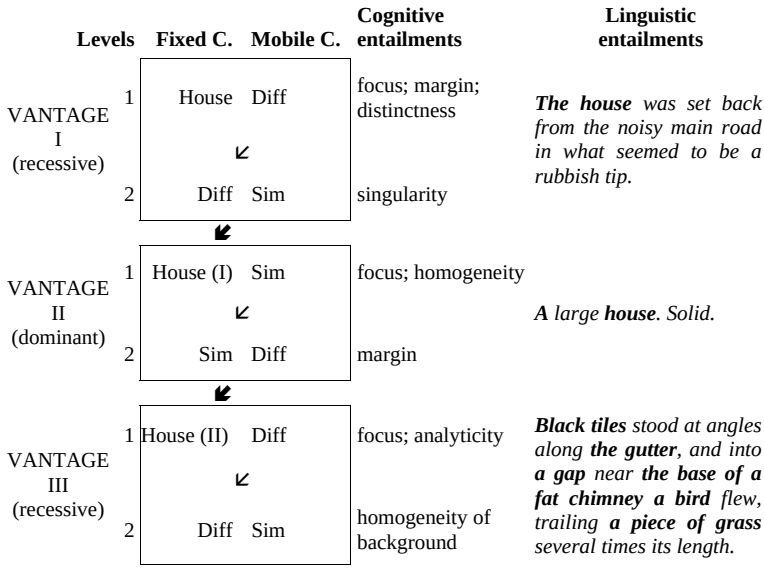

Figure 7: *Modelling of 'house' in the passage from Lessing (1985)*

5. *Where the analysis might have gone astray*

The transfer from categorization, specifically colour categorization, to other domains of conceptualization, specifically to linguistic encoding of concepts, may entail several departures from the original formulation of VT, of which let me address one. In the analysis above we are faced with an ongoing flow of recessive and dominant vantages following one another in unhampered succession, whereas VT stipulates that vantages coexist simultaneously.[5] There seems to be no way of constraining this succession other than by means of a change of the discourse theme (let us recall that the text has been arbitrarily terminated at a convenient point). Yet VT postulates that a category involves only one or two, and, rarely, three vantages. If a fourth vantage appears, the category is usually modelled as two frames of two vantages each. Colour categories in world languages, complex though they are, do not seem to call for the recognition of a greater number of vantages, but this might be the case with linguistic encoding of events or entities in discourse.

[5] Incidentally, the same modification has been introduced by Allan (2002) in his VT2, in which the synthetic subvantage precedes the analytic subvantage (cf. Section 3).

A solution to this dilemma might be sought in the distinct natures of categorization and conceptualization. I argued above that the two processes are related but non-identical, so although the dominant-recessive pattern defines a category, it might take a whole series of interlinked and interdependent vantages to define a broader conceptualization.

6. *VT on language and cognition*

Convincing analyses of specific data constitute, of course, the *raison d'être* of attempts to apply VT to language, but for a cognitive linguist the alluring force of the theory derives from its more general observations on the nature of language and cognition. These include the issues of subjectivity, the agency of the conceptualizer, and linguistic relativity / universalism.

Subjectivity has to do with the conceptualizer's point of view or perspective, a notion crucial to cognitive linguistics. The dominant and recessive types of vantage represent different viewpoints, and different ways of conceptualizing the same entity or scene. VT proposes an explanation of these phenomena by referring to the variable degrees of attention to similarity and difference, the strength of their contributions to conceptualization and the focusing, 'stabilizing' role of inherently fixed coordinates.

The cognitive abilities of language-users both drive and limit the categorization / space-time analogy. Within the limits, the conceptualizer enjoys a considerable amount of leeway (hence the multitude of category types in world languages) but operates according to the same fundamental cognitive processes. Thus, the conceptualizer is unconstrained in any dramatic sense by the language system he or she is using. This makes VT a non-Whorfian theory, but – paradoxically – one which stresses cultural and individual differences between speakers. For example, MacLaury found that two speakers of Tenejapa Tzeltal (the Mayan language family, spoken in Chiapas, Mexico), who had both spent their entire lives in the same village, used the same colour terms but categorized the colours differently (for more details cf. MacLaury 2000:274-276). Relating these findings to the Sapir-Whorf hypothesis, MacLaury first quotes the famous excerpt from Whorf:

> We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe, *unless their linguistic backgrounds are similar, or can in some way be calibrated.* (Whorf 1956:214; quoted in, and italics added by, MacLaury 2000:289)

He then proposes to replace the italicized part with "not even if their linguistic backgrounds derive from one rural hamlet" (MacLaury 2000:289).

The agency of the conceptualizer operates within certain broad cognitive constraints to yield different results not *because of* the nature of the language spoken, but *regardless* of it. It is this cognitive flexibility that is responsible for intralinguistic variation:

> Within constraints imposed by visual neurology, people shape their categories in accord with their inclinations to subject the world to broad or constricted points of view. This argument *does not inveigh against relativity*, which is shown herein to pertain cross-linguistically and between individuals. Rather, the claim is that *language has no influence on the process*. (MacLaury 2000:276; emphasis added)

This view reconciles the universal nature of cognitive process types with the diversity of cognition-based categories and linguistic conceptualizations in world languages. Therefore, it should be attractive to cognitive linguists, who assume that meaning resides in conceptualization processes (Langacker 1991:ix) but also stress individual conceptualization patterns influenced by different languages.

7. *Directions of further research*

If VT-based analyses of language structure and use are to bear fruit, they must be preceded by successful adaptations of the theory to this domain. The modifications could proceed in two directions. One would be an attempt to remain faithful to the details of VT and specify in what areas of linguistics it can be applied. This option runs the risk of getting lost in the labyrinth of the theory's complexities without real progress. The other direction would be to modify the details of the theory but accept and corroborate its general tenets, such as those pertaining to the agency of the conceptualizer or the issue of relativity.

In my opinion, the latter option is more promising, even though it may lead to major departures from VT to the point of coming up with a new theory (cf. Allan's VT2), because it gives priority to data. In this sense it actually follows the VT tradition, which arose precisely from its founder's dissatisfaction with existing models of colour categorization. Language data other than colour terms require separate treatment, and one specific adaptation might be that in linguistically encoded conceptualization we should distinguish between 'canonical' and 'non-canonical' vantages, rather than dominant and recessive ones. Thus, in the case of the excerpt analyzed above, the house would be viewed in the canonical (default) and non-canonical manner, with different arrangements of coordinates and different strengths of similarity and difference. A more precise specification of the nature of these vantages is still pending.

Language is hard to measure. However, if it appeared that the cognitive processes involved in colour categorization were the same as those behind other language domains, we would indeed have at our disposal a powerful means of arriving at non-arbitrary, cognitively-oriented descriptions of language data. Cognitive linguistics would thus gain a powerful ally.

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THE NORMATIVITY OF COLOUR

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In this paper I introduce and discuss – albeit briefly – neglected approaches for rethinking the conundra thrown up in anthropology and linguistics by their reliance on mainstream colour science.[1] I draw on arguments proposed by Charles Sanders Peirce[2], Wilfred Sellars and Robert Brandom[3] – three philosophers known as 'pragmatists' – who allow us to think about colour vision in its social context rather than in terms of the isolated observer of the empiricist tradition. After briefly considering the historical and anthropological support for a socio-historical view of colour, I draw on work in the philosophy of science that suggests a way of relating science to culture and 'experience' that is very different from, and, I think, more fruitful, than that of the Basic Color Terms tradition. In one short paper, I can, of course, offer only a sketch map of all this territory. I hope that my brief remarks will provoke some readers to go further.

Peirce, Sellars and Brandom all suggest that perceiving is thought of too much as sensing and too little as knowing and being in an intentional state. To redress the balance may clarify or dissolve long-standing problems in colour science. According to Sellars' phrase, knowing always involves the 'game' of giving and asking for reasons. That is, he, like the others, takes an unabashedly human-centred view of knowledge, in which social norms of inference are regulative of what count as good reasons and so on (hence my title). This does not deny that animals have 'knowledge', though different in many ways (which we by no means understand and can as yet formulate only simplistically) from that of humans. At least, this is so if knowledge is conceived broadly as

[1] I want to thank Paul Whittle for his help in preparing this chapter although I am solely responsible for the arguments.

[2] "A concept of color of any one hue, of any one chroma, or any one luminosity is a concept of color somewhat indeterminate" (Peirce 1998:395).

[3] Sellars' pupil, who expounded and greatly developed his ideas.

extending from acquired skills or means of coping to explicit linguistic claims. The nature of such knowledge is obviously relative to the life-world of the organism. My strategy is to start for once from human life. Colour science and the study of visual perception in general has been dominated by the assumption of human-animal continuity under which seeing is thought of as a basic biological process. I suggest attending to the discontinuity between humans and animals.[4] That is, I want to think about seeing colour as humans see it, rather than primarily as a response to spectral differences, the starting-point of mainstream colour science.

'Seeing' I take to be acquiring knowledge by looking. Knowledge includes both knowing-how and knowing-that, though my argument will put most weight on actual or potential verbal claims: Sellars' game of giving and asking for reasons.

Colour science is based very much on Lockean empiricist and Cartesian foundations which presume a 'sensory core' to awareness. It is 'there in experience' as the logically and epistemically final base and ultimate referent for all activity described as 'cognitive'. Such a sensory core has to be there, it is argued, if so-called 'concepts' are to be applicable in experience. Concepts, in this tradition, are thought of primarily as categories which order sensory experiences. I critique first the notion of sensory core, and then the idea that concepts are primarily categories.

Peirce (1986) argued against the idea of a sensory core when he discussed Helmholtz's (1911) neo-Kantianism, which drew on Descartes and Locke. Peirce argued that there can be no such core independent of the structurings of habit, for its character is determined by the very generative functioning of habit. Habits of attention are the most obvious. This means that practices influence perception; or rather, they form it into a 'skill' or 'mastery'.[5] Peirce explored the relation of colour (and space) to science and metaphysics, to perception, to

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[4] Brandom writes "My hope is that by slighting the similarities to animals which preoccupied Locke and Hume and highlighting the possibilities opened up by engaging in social practices of giving and asking for reasons, we will get closer to an account of being human that does justice to the kinds of consciousness and self-consciousness distinctive of us as *cultural*, and not merely *natural*, creatures" (2000:35).

[5] Peirce criticized the dominance of Helmholtz's theory of colour as the "pet *petitio principii* of our time" – that is, Helmholtz thoroughly presupposed what he set out to show. Peirce was especially scathing in his criticism of Helmholtz's adaptation of the theory of 'mixed colours' which was borrowed from Thomas Young, as well as of Maxwell (1890) who embellished it further and "made it even more lucid and beautiful than Helmholtz had done" (Kevelson 1996:116).

epistemology, to sociocultural institutions, intersubjective behaviour, and as a model in framing theories of value. He further examined the symbolic significance of colours, and the idea that colour is an invention which does not inhere in an observable object, but is produced by the relation between observer and observable. All of these, and more, reflected a multifaceted interest in the general idea of colour as representative of human observational / interpretational ability (Kevelson 1996:118-119). Thus Peirce provided an early critique of how notions of colour were being formed within science, giving strong reasons for his suspicions that they were incorrect.

Nearly a century later, Sellars, in *Empiricism and the Philosophy of Mind* (1956), took as his goal an attack on the whole framework of 'givenness' – what he called 'The Myth of the Given'.[6] His objections were in many ways similar to those of Peirce. His goal, according to Sellars, was to dismantle the Lockean empiricism which postulates a nonverbal, nonconceptual awareness that serves both as the raw material for a process of abstraction by which concepts are formed, and as our warrant for the ground-level applications of those concepts. This Myth of the Given relies on the presupposition that the perceiver already has concepts (such as RED) innately in the head, so their acquisition does not need to be accounted for. Indeed, one can read Locke as describing the terms in which colour, having been established in the brain by God, is triggered into 'awareness' by the forces of civilized society. Therefore, the degree of awareness of colour for Locke was indicative of the level of civilization. Locke's epistemology was formulated in the light of the new empirical sciences resting on the mechanist assumptions of the corpuscularian theory, initially developed by Boyle (1772). Locke's framework, which Laslett says was "lifted from Descartes" (2000:80), allowed him to produce accounts of both epistemology and civil society that were causally reductionist, yet also emergentist (Saunders 2006). This means that, while reduction is to a fundamental 'natural state' which can be defined by science, the idea of a deterministically and scaled evolutionary development is also proposed. This is a train of thought that was later elaborated for colour by Berlin and Kay (1969), restating the foundationalist epistemology of empiricism in terms of linguistics and psychology (Saunders 2006). This has become one influential example found amongst evolutionary geneticists, supporting both reductionism and evolutionary growth.

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[6] 'Givenness' is a similar concept to that of the 'sensory core'.

The heart of Sellars' argument is this. It involves two senses of the word *given*; *given* meaning the 'data' of immediate experience, and *given* meaning 'innate'. It is possible that the former can be saved if enough innate conceptual apparatus is assumed, but Sellars argues against both. The consensus assumption is that the sequence of events from object to inferred judgements is:

> Physical objects – 1→ Sensings of Sense Contents – 2→ Noninferential beliefs – 3→ Inferential beliefs (Brandom 1997:126).

For example, in the case of RED:

> Red object – 1→ gives experience of red – 2→ prompts the utterance 'This is red' – 3→ (implying, for example) 'This is not green'.

Now, arrow 1 is causal, arrow 3 is inferential, but what is arrow 2? Sellars and Brandom argue that there is no logically coherent formulation of this transition from a non-propositional 'experience' to a belief, if the experience is to provide grounds for the belief. McDowell makes a similar argument in *Mind and World* (1994). Sellars argues that the uncritical acceptance of transition 2 is a mistake of a piece with the naturalistic fallacy in ethics (the attempt to derive OUGHT from IS). To extend the concrete colour example, here is Brandom on learning to recognize a colour:

> Thus children learn reliably to sort lollipops into piles labelled with color words first, and only once certified as reliable noninferential discriminators of colors, do they graduate to forming beliefs of the form 'That lollipop is purple.' At that stage, if asked what reasons they have for those beliefs, they can invoke their own reliability…saying something like, 'I can tell what things are purple by looking at them'. (Brandom 2000:107, my emphasis)

That is, the child at that stage has the visual skill of looking and seeing whether something is purple. One can say that, at that stage, the child's looking-and-seeing yields, although it does not constitute, the knowledge that 'That lollipop is purple'. What constitutes her claim as knowledge is her being socially accredited as a reliable see-er, or, in Brandom's jargon, a reliable noninferential discriminator of colors, plus, equally important, her mastery of at least some of the implications of the concept PURPLE and of related concepts (IS, COLOUR,

other colour terms, etc.).[7] Thus, after acquiring the visual skill, and only then, arrow 2 becomes a cause, but only a partial cause, of non-inferential beliefs. It leads to the next stage, an assertion (and so knowledge) only with the aid of the linguistic and inferential skills involved in mastering the concept PURPLE and in making assertions. The training thus has two components: the visual skill – learning to recognize purple 'at a glance' – and a bunch of linguistic / pragmatic skills.

It is the central role of the social matrix in this account that makes it radically different from the 'methodological solipsism' of the received empirical tradition in which the individual's unaided senses give rise to basic knowledge.[8] It is, in fact, the conviction that human mentality is social through and through that is driving the critiques of Peirce, Sellars and Brandom (as can also be found in the works of Rorty in general, and in Davidson (see LePore & McLaughlin 1985; LePore 1986)). Without the social matrix, the child does not come to 'see colours as a human does'. The heart of this is the ability to recognize (know) colours by looking, involving many auxiliary capacities to do with attention, language, concepts and memory. This complex of abilities is so highly practised that we come, as young children, to recognize familiar colours 'at a glance'. It comes to seem 'natural' to us. But it is, or so I argue, that physiological and anatomical processes are intertwined with socio-historical facts and practices. Although people must always have been aware that highly practised skills come to seem natural, it has only relatively recently been appreciated – and here anthropology has played an important role – that early acquisition induces amnesia for the socio-history. Philosophers were as slow to appreciate this as anyone and, in particular, mistook natural-seeming perceptual capacities for epistemological foundations.[9] Colour science with its classically empiricist approach takes immediate perceptual experience as the paradigm of both awareness and knowledge, and adds to it a view of language that focuses

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[7] Other supports for this train of thought are Gibson's 'education of attention', and recent studies of 'joint attention' (Eilan, Hoel, McCormack & Roessler 2005), which make explicit its social origin in adult-child interaction.

[8] I say 'received tradition' because Locke himself was well aware of the crucial importance of education ("the forces of civilized society" above) for perception. Within the empiricist tradition, the awareness of the importance of the social context is never quite lost but continually marginalized as, for example, 'social factors' that are pushed to one side, or as part of linguistics but not of 'perception itself'.

[9] It is, of course, trivially true that we use our perceptual skills to acquire knowledge. The target of criticism here should perhaps be the very idea of a *foundational* epistemology (Rorty 1980), the apotheosis of 'the given', but that would go beyond the bounds of this paper.

on reference, denotation and extension, arguing that the most basic concepts are categorizations of sense experiences. But this is too thin a view of concepts.

Sellars argues, as had Peirce and others, that only what is propositionally contentful, and so conceptually articulated, can serve as the ground or constitution of knowlege. A crucial distinguishing feature of epistemic claims is that their expression requires a normative vocabulary. For Sellars, talk of 'knowledge' is inevitably talk of what someone is committed to, and whether they are in various senses entitled to those commitments. Brandom continues this line of argument. Like Peirce he has no quarrel with what he calls "platitudinous empiricism", which restricts itself to the observation that without perceptual capacities we can have no knowledge of contingent matters of fact, and that conceptual content is unintelligible apart from its relation to perceptual capacities (Brandon 2000:23). Brandom greatly develops Sellars' view that a theory of concepts should take its principal role to be in reasoning, in inference, rather than in categorizing perceptual experiences. Such a base in inference, pragmatics, and therefore ethics (commitment), yields a far richer notion of concepts and concept-use than that to be found in the literature on 'categorical perception'. The latter looks only 'upstream' to conditions of justification, whereas an inferential approach also looks 'downstream' to the use of the concept. Brandom generates an account of sapient awareness that provides the basis for a corresponding account of semantic and conceptual self consciousness (not to mention the nature of belief, truth, talk of 'representations' and many other topics of importance to students of perception; there are considerable resources here).

The socio-historical origins of human colour seeing are confirmed by both history and ethnography. In the history of colour, the pioneering work of John Gage (1993) shows the slow development of colour concepts over two millennia of European culture. People understood and wrote about colour so differently, and came so slowly to current concepts, that it is scarcely credible that they were all the time 'seeing colour' in the same way that contemporary people do. Until the end of the nineteenth century there was no standardization of 'colour' even in Europe. Ethnography furthermore shows that there are, or have been, many life-worlds in which the particular social training of 'seeing colour' just described does not take place – it is not relevant to those life-worlds (see, for example, Saunders & van Brakel 1997). When colour researchers arrive in such a society armed, for example, with standard Munsell samples and ask for 'colour names', the answers can be extremely bizarre, so that the responders are assigned to a low evolutionary level of cultural development. But, as the linguist John Lucy has powerfully argued, such research is a travesty

of comparative linguistics, and is *a fortiori* a travesty of 'cross-cultural' research (Lucy 1997). In terms of the schema I am suggesting, its flaws are, first, not to see that skills like 'recognizing purple at a glance' need to be acquired, and, secondly, to ignore the 'bunch of linguistic skills' that constitute the recognition of purple as knowledge.

The normative nature of colour terms was vividly brought home to me in my field-work among the Kwakwaka'wakw of the Canadian northwest. Even to attend to and talk about 'colour' in the manner of colour science was immediately to place myself in the colonizing discourse. For several of my consultants, trying to relate indigenous ways of talking to what I called 'colour terms' was upsetting. It recalled their harrowing experiences in the residential schools that were imposed on them for more than a century. I was often told that those kinds of words did not exist in Kwakw'ala. They were 'normative' in the most direct way: their use was governed by school norms and, more generally, by those of the colonizing discourse. They were not at all the emotionally neutral reporting of sensations that is the working assumption of the colour-naming literature. The Kwakwaka'wakw are, in many contexts, such as judging the conditions of the sea, or the merit or appropriateness of some situation, exquisitely sensitive to what we call 'colour', but it is never focally attended to, never disembedded from its context. Robust colour scientists sometimes protest, exemplifying the 'Myth of the Given': "But surely they see colour, they've got colour sensations, and isn't that the heart of our enquiry?" But I came to see 'sensation-talk' (including the belief that there are sensations as distinct from sensation-talk) in the way that Rodney Needham (1972) came to see belief-talk, that is as something not by any means to be taken for granted, but rather as just another of the anthropologists' imported preconceptions (albeit, in both cases, ones that are basic to our habits of thought and, therefore, extremely difficult to displace) that had themselves to be anthropologized if we were to make a serious attempt to understand something other than ourselves. The Kwakwaka'wakw responses to queries about colour terms are hard to understand under the classical empiricist assumptions. They fit much more naturally into a scheme in which seeing is regarded as a set of skills acquired in a social context and informed by normative concepts.

Can these considerations lead to a new critical history that could destabilize present colour epistemologies by means of the other pasts or other relevancies that it brings to light (Rose 1998)? How can we place bounds round the exemplary narratives that can legitimately be told about 'colour'? Is 'colour' only part of a particular historical concrescence (ours) of metrical reification (a definition by measurement)? The tension between different pragmatic-political

investments is crucial for modern work on the historiography of colour and one conclusion is that no detailed history of colour can be provided which does not recognize such pragmatic elements. There is no empirical work that does not organize the fragments and debris of the past according to its own relevancies and concerns, and it is these that need to be spelled out.

I suggest that if 'colour' is a coherent concept at all it is an artifactual kind, not a natural kind. It has been generally regarded as a coherent domain comprising stacked sub-domains such as surface structure, light, retinal image, cone absorptions, a series of neural codes in retina and brain, colour experience, categories, colour terms. Broadly speaking, events in each sub-domain are supposed to be causally explicable in terms of the one below. This is the 'isomorphy thesis' that articulates the enclosure of colour as an autonomous domain and constitutes it as a deterministic hierarchy in what might be regarded as the Newtonian Ideal (Saunders 2006): unity is increased at all costs and only phenomena defined in terms of isomorphic sub-domains are to count as 'colour'. 'The colour domain' has thereby been determined by rigid enclosure.

The assumption that the underlying structure of existence is mathematical has achieved a powerful position in various domains. Counter to this belief, Husserl's (1970) notion of 'surreptitious substitution' explains the dominant power. He argues that the mathematically substructed world comes to represent "the only real world … our everyday life-world". This means that the pure idealities of science, applied in a practical way to the life-world, historically obscure internal transfers from *a priori* theory to 'guileless' empirical inquiry. In the colour domain, this means that the idealized, geometricized 'colour' becomes the only register, and charter of 'reality'. Thus, chromatic data-sets come to define the world; it is as if it were claimed that a computer performance of Bach's B-Minor Mass was its one and only true rendition (an analogy from Heelan 1992: 210).

Third and Fourth World peoples whose visual life-world is still in the vernacular allow us a glimpse of what is denied us when we take on the naturalizing nostrums of colour science. Their responses to mainstream colour research (whether in Berlin and Kay 1969, or in the 'World Color Survey', or in my own fieldwork) strengthen the conviction that the historical implementation of this understanding of colour in ourselves has produced an account based on specialized scientific knowledge which infuses into and becomes part of ordinary language. It becomes clear that our linguistic and geometrical representations of colour are not inert media for describing a given prior reality or innate conceptual mechanisms, but are created by applying the ontological presuppositions of science to spectral differences and our responses to them.

Following Peirce, Sellars and Brandom, I suggest that sense perception itself is changed by this ideological and technological framework, its habitual modes of apprehension changing with the changes in existence. If colour is grasped as a made thing, a theory-saturated naturalizing practice, then we may glimpse in ways other than our own habitual modes of consciousness that chromaticity could be characterized in terms of more polymorphic complexity. Third and Fourth World peoples should, therefore, not be characterized as having lower evolutionary levels of perceptuo-linguistic categorization, or be 'relativized' because they behave differently from 'us' on Munsell or other colour tests. Rather they might be approached as possibly still experiencing a consciousness lost to those whose manner of existence belongs to the representational modes of the Euclidean and now pixilated life-world.

Colour science might then admit its own contingency and, in turn, open up quite general questions about how theory, experiment, and technology combine in generating objects for 'knowing' and about what might then count as 'coloured reality' (Heelan 1988:515). Thus, while a historicist account of the colour domain, like that of Berlin and Kay, emphasizes the 'progress' that science has made towards understanding 'colour in itself', a historiographic account (which stands further back) might show how the narratives of historicism help to constitute colour and colour science.

In presenting the issues this way I am attempting to follow the injunction of Richard Rorty that "Part of my ambition...is to help it come to pass that where epistemology and metaphysics were, sociology and history shall be' (Rorty 2000:xvi). It is an attempt to pull discussion of colour away from the tedious swings of the universalism-relativism pendulum and move it into a more sociological and historical framework in which its riches can be better appreciated and understood.

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AGE-RELATED DIFFERENCES IN THE BASIC COLOUR VOCABULARY OF FRENCH

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This paper is concerned mainly with age-related differences in the basic colour vocabulary of French and in particular with differences in the use of the terms *brun* and *marron*, both used at the present time to denote the basic category BROWN. The emphasis will not be on the childhood acquisition of colour terms, interesting as that is. There is a considerable amount of published research on that subject, so, in my references, I give only a few indications, including the reference to Fijalkow (1974) for French. I am mainly interested in showing that, in evolutionary terms, the basic colour vocabulary of French is changing, and that that change is revealed not only by changes in real time, historical change, but also by changes in apparent time as revealed by differences in usage by different age groups.

At the present time French appears to have one basic category BROWN, encoded by two basic terms *brun* and *marron.* Already in 1969 Berlin and Kay acknowledged that a language might have more than eleven basic colour terms, citing Russian and Hungarian. Corbett and Morgan (1988), Davies et al. (1998) and others have written extensively on Russian, and Forbes and Kiss (2000), as well as MacLaury, Almási and Kövecses (1997), have reported on Hungarian.

As for *brun* and *marron*, everything at present points to these two terms being basic in the Berlin and Kay (1969) sense. They are psychologically salient in terms of frequency and order of mention in elicited lists, two of Romney and D'Andrade's measures of salience (Romney & D'Andrade 1964). Neither is restricted in use, although there are two contexts, namely hair and physical type, in which *marron* is not used. Both terms, furthermore, are used throughout the colour space, which leads me to believe that the two terms are in co-extension, in MacLaury's sense of the term (MacLaury 1997:130).

In various experiments over the years I have used standard mapping procedures using the Munsell array, and have reported some of the results in other papers (see *References*). In the most recent mappings I asked twenty-two

informants to mark four basic colours. I asked half the number of informants to mark *brun* among four basic colours and half the number of informants to mark *marron.* What they did was mark the best BROWN, whether they called it *brun* or *marron.* The mapping is shown in Figure 1 and is very much the same as that which I reported in Forbes (1979), with the foci still clustered mainly within the Berlin and Kay (1969) average focal space for brown.

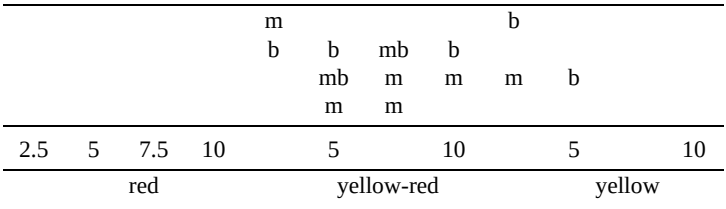

Figure 1: *Mapping results for* brun *and* marron

I consider the context of the use of colour terms to be an important factor, and when we are considering the status of *brun* and *marron* as basic terms, it is particularly important. It is the use of colour terms that reveals not so much perceptual factors, as cognitive and cultural factors. Lucy (1997) points to the importance of context, and Wierzbicka (1992) has reminded us of the important link between semantics, culture and cognition. Although these links might be seen more obviously in the use of non-basic terms, we have to consider whether *brun* and *marron* might be contextual variants. In my first investigation in 1975 informants were asked to list things that they would describe as being *brun* and things they would describe as being *marron.* In a replication exercise undertaken in 1995 I asked the same question and found very little difference in the composition of the lists. The 1975 distribution is shown in Table 1.

There are two contexts in which *marron* is not used, and this holds for lists compiled for both surveys. The term for hair colour is *brun* (I consider the seven mentions of *marron* in this context to be aberrant, perhaps explained by a term to denote a hair dye colour. There was only one mention of *marron* to describe hair in the 1995 survey). The term for the description of physical type is definitely *brun. Marron* in this context would be totally unacceptable. To describe a person as being *marron* would be to invoke the other meaning of *marron* which has a different etymology and means “dishonest”. If *brun* were restricted to these two contexts, hair and physical type, there would be no question of it being a basic term in the sense I have described. However, it is not so restricted. *Brun* is used to describe a wide range of objects as is shown in

both the 1975 and the 1995 lists. This may not continue to be the case but it is likely that certain fixed expressions with *brun* will remain.

Category of object	**Number of mentions**	
	brun	***marron***
Hair	60	7
Eyes	20	45
Skin and other physical attributes	20	1
Persons (physical type)	12	0
Animals (including horses)	22	4
Trees and parts of trees	23	38
Clothes and material	23	41
Leather	14	22
Paint colour	11	8
Earth and Terra Cotta	9	4
(Wooden) furniture	8	15
Food	3	10
Tobacco	3	0
Miscellaneous	4	1

Table 1: *The distribution of* brun *and* marron *in informants' lists*
Fixed expressions with brun *include:* tabac brun, bière brune, sauce brune, ours brun.

Marron is a comparatively new colour term. It was not used as a colour term before the eighteenth century. It is the name of the fruit, the edible chestnut, and in the beginning it was often used as a modifier, e.g. *brun marron* "chestnut brown", in the way English speakers might use *raspberry* in an expression like *raspberry red*. In French the modifier comes after the noun and expressions like *jaune citron* "lemon yellow" are still common.

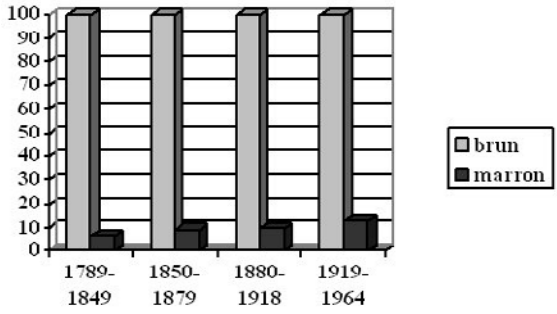

Figure 2: *Number of mentions of* marron *per 100 mentions of* brun

Figure 2 shows the gradual increase in the *marron* to *brun* ratio in literary texts over the period from 1789 to 1964. The data were collected from the computer corpus of the *Trésor de la Langue Française*.

Figure 2 shows change over real time but there is another way of observing this. We can replicate earlier experiments at a later date. I repeated the 1975 experiments in 1995 using the same total number of informants, the same number of informants in each age group, the same number of men and women in each age group, and in the same regions of France. Here the evolutionary change was more marked than in the slow change observed in the literary data. There is a marked difference in salience as Table 2 shows.

		Frequency				**Order of Mention**	
		no. of mentions		rank		rank	
		1975	1995	1975	1995	1975	1995
BLACK	noir	90	86	3eq.	5	6	4
WHITE	blanc	89	85	5	6	3	6
RED	rouge	94	99	1	1	1eq.	2
GREEN	vert	82	89	6	3eq.	5	5
YELLOW	jaune	90	89	3eq.	3eq.	4	3
BLUE	bleu	91	97	2	2	1eq.	1
BROWN	brun	42	8	12	12	12	12
	marron	68	39	8	9	8	9
PURPLE	violet	62	44	9	8	9	8
PINK	rose	59	34	10	11	11	10
ORANGE	orange	76	52	7	7	7	7
GREY	gris	55	35	11	10	10	11

Table 2: *The salience of French colour terms as measured by (a) Frequency (b) Order of Mention* (eq. = equal; N=98)

Salience is measured by frequency of mention and order of mention in elicited lists. Written questionnaires were used in both surveys, in 1975 and 1995. Informants were asked to list terms without being given a time limit. Some gave very short lists and others very long lists. Table 2 shows the number of mentions of the twelve terms encoding eleven basic colour categories. For my purpose here I am really interested only in the change in frequency of *brun* and *marron*, but it is perhaps interesting to note that, in the top half of the table, we have what are now often referred to as the six primary basic terms and there is a distinct jump down to the next six, often referred to as secondary basic terms. The next most frequently mentioned terms, *beige*, *mauve* and *bordeaux*,

are almost as frequent as *brun*, showing that there is a continuum. *Brun* does, however, unlike *beige, mauve* and *bordeaux,* fulfil many of the conditions for basicnesss. It is inflected for gender and number, it takes suffixes, and it has a verb form, while *marron* has none of these characteristics yet. There is, however, a distinct drop in frequency for *brun* between 1975 and 1995: forty-two mentions in 1975 down to eight mentions twenty years later.

We must now look at age differences to see if the change in real time recorded above is reflected in a change in apparent time. Since I had begun to suspect even before I undertook the replication exercise that the use of *brun* was on the decrease and that, although both terms are used throughout the French BROWN category, *marron* was beginning to displace *brun* as the term to denote BROWN, I did a survey with the object of testing variation according to gender and age and also regional variation. I found variation in all three. I have written about gender and regional variation elsewhere (Forbes 1986), so in this article I will concentrate on age differences. I wanted to test as many people as possible in as many regions of France as possible and so I used questionnaires. However, with the very youngest age group of nursery school children I was able to interview them in person. The age differences in the use of *brun* and *marron* are striking, as Table 3 shows.

Age group	Mentions of *brun* as a percentage of mentions of *marron*
3-6	0%
7-11	0.6%
12-17	7%
18-30	10%
31-45	33%
46-60	30%
61-65	52%

Table 3: *Age- related differences in the use of* brun *and* marron *All regions apart from Alsace*(N=282)

As described in Forbes (1986), informants were asked to complete sixteen sentences with a colour name, and among them were eight sentences containing names of things that had been given in an earlier questionnaire as being brown. They were all things that are intrinsically brown. Among the very young children none used *brun* to describe any of the brown objects on the list. Even in the older group of primary school children only one used *brun*. These findings correspond to the findings of Fijalkow (1974). Then, progressing

through the age groups, there is a gradual increase in the use of *brun*, and the change is all in one direction. We should not overlook the fact that factors other than age may be entering the picture. *Brun* is often considered to be the correct term and older people might be more concerned to give what they think to be the proper word. There are also certain regional differences and, as I have mentioned elsewhere (Forbes 1986), the *brun* and *marron* distribution is very different in Alsace. I suggested then that the reason for this might be because of the influence of the Alsatian dialect where the word for brown is a cognate of *brun*. My sample of 87 informants included young people and city dwellers in Strasbourg who did not speak Alsatian. In the 1975 survey twice as many Alsatian informants mentioned *brun* as mentioned *marron.* However, in 1995 more informants mentioned *marron* than mentioned *brun.* So *marron* is catching up in Alsace and this was already reflected in the very young age group in the 1986 survey where 51% used *marron* to describe brown things. Strangely enough, whereas not so many in the middle-aged groups used *marron* (between 16% and 29%), 46% of the older people did. Although none of the primary school children in the other regions used *brun* to complete the sentences in the questionnaire, they did make an attempt at marking it on the colour array when asked, but the results are all over the colour space (see Figure 3).

When asked to map *marron* the primary school children are considerably more confident. The mapping results for *marron* are much more what we would expect and conform more to the adult pattern, as Figure 4 shows. There are still a few strays but most of the results fall within the area designated by Berlin and Kay in 1969 as containing the focus for brown averaged over the languages they studied.

The conclusion I reach is that the changes seen in apparent time mirror on-going changes in real time. *Brun* is still an important term and retains many of the features of a basic colour term. It is giving way to *marron* in many contexts but we are not seeing the kind of change to the structure of the lexicon where one word replaces another. *Brun* may eventually be pushed to the periphery of the semantic field of colour but I do not think that has happened yet. Re-visiting exercises are normally carried out at intervals of twenty years and I have no statistical evidence to show that the change noted between 1975 and 1995 has continued. However, from what I observe I have no reason to think that the change is not ongoing. What we have at present are two salient terms denoting the single category BROWN. Present theories of colour semantics do not rule this out (cf. MacLaury 1997). The terms are in co-extension in that they are both used throughout the BROWN colour space. They are not synonyms. They are not

in complementary distribution. They are not in a relation of inclusion. However, they are not equal. The way MacLaury puts it in his exposition of vantage theory is that one member of the pair is dominant and the other is recessive (MacLaury 1997:515). MacLaury, citing Forbes (1986), also points out that, although historically the dominant vantage develops before the recessive vantage, they may swap roles, as has happened in French between the currently dominant *marron* and the recessive *brun* (MacLaury 2000:288, note 9). The choice of term is determined not only by perceptual factors but by social and cultural factors, and the meaning of the terms, indeed of all colour terms, includes their reference, that is their meaning in use, as well as their denotation.

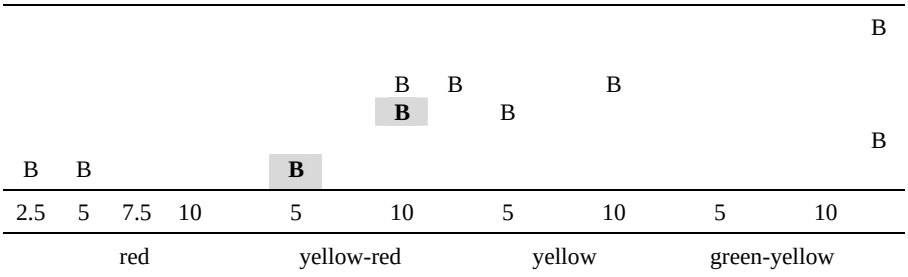

Figure 3*: Mapping of* brun *by primary school children*
The highlighted squares indicate chips that fall within the area containing Berlin and Kay's average focus for the brown category over twenty languages. (N=22)

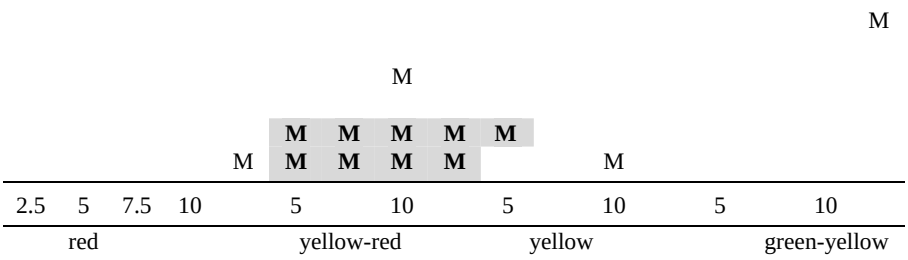

Figure 4: *Mapping of* marron *by primary school children*
The highlighted squares indicate chips that fall within the area of the colour space containing Berlin and Kay's average focus for the brown category over twenty languages. (N=22)

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TOWARDS A GENERAL DESCRIPTION OF THE SEMANTIC FIELD OF COLOUR IN EUROPEAN PORTUGUESE

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1. *Introduction*

This paper[1] is a result of a larger investigation of property terms in European Portuguese presented as a Ph.D. thesis to the University of Lisbon (Correia 1999), directed by Danielle Corbin (University of Lille, France).[2] The goal of that work was to describe how the different properties of objects are named in this language, and what type of morphological, semantic, pragmatic and cognitive aspects are taken into account when selecting one of the different word-formation patterns available in this language to name a specific property. One of the basic assumptions of this work is that, in the naming of different categories, linguistic form and meaning cannot be studied separately.

It is worth emphasizing that the object of the above-mentioned Ph.D. research was not to study colour terms; they were only briefly treated when we initially formed the hypothesis that they were also property terms, but that hypothesis was quickly invalidated for the reasons presented below.[3] Thus this is my first incursion into the colour-naming domain.

In the above-mentioned work, it was verified that colour terms form a particular category of nouns within the Portuguese language, presenting specific morphological, syntactic and semantic characteristics, that is they behave differently from other noun categories such as that of property terms.

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[1] I would like to thank Ana Mineiro for her valuable suggestions and comments, and also Connie Cabral for having 'anglicized' this paper. I would also like to thank the editors of this book, and especially Carole Biggam, for all their valuable suggestions and corrections to my text.

[2] A condensed and revised version of this work was published later (Correia 2004).

[3] As colour is, within the philosophical tradition, the most paradigmatic property of sense (cf. Van de Velde 1996:146), it was reasonable to expect that colour terms comprised a category of property terms.

In this paper I will, first of all, present the main characteristics of property terms in European Portuguese and then those of colour terms, focusing on the differences between the two noun categories. Then I will briefly present the paradigm of colour naming in Portuguese. Finally, I will focus on the designation of the colour RED, which presents some characteristic features in this language.

My perspective on these phenomena is mainly synchronic, although some historical data are taken into account whenever appropriate. The data under observation concern only European Portuguese.

2. *Property terms*

There are two main processes in Portuguese by which property nouns are formed:

1. *Deadjectival suffixation*

This is the more productive and prototypical process. In these cases, one of nine possible suffixes is added to an adjectival base, as shown in the following examples:

-ia, e.g. *acefalia*, "acephaly"; *androginia*, "androgyny"
-idade, e.g. *versatilidade*, "versatility"; *agilidade*, "agility"
-ismo, e.g. *abolicionismo*, "abolitionism"; *amadorismo*, "amateurism"
-ez, e.g. *pequenez*, "smallness"; *aridez*, "aridity"
-eza, e.g. *clareza*, "clarity"; *dureza*, "hardness"
-ice, e.g. *velhice*, "oldness"; *meiguice*, "tenderness"
-eira, e.g. *cegueira*, "blindness"
-idão, e.g. *lentidão*, "slowness"; *escuridão*, "darkness"
-ura, e.g. *altura*, "tallness"; *doçura*, "sweetness".

2. *Conversion from the adjectival form without the use of suffixes.*

Such cases occur where there are restrictions on the application of the suffixation process, and these restrictions can be of various types:

2.1 *Unacceptable phonological group*. Cases in which the sequence of phonological elements which would have been obtained after suffixation is not acceptable in Portuguese, e.g. *vazio*, "empty" or "emptiness", not **vaziidade*, **vaziia*, **vazieza* and so on.

2.2 *A loan form*. The adjectival base is a loan form, not adapted to Portuguese, e.g. *naïf*.

2.3 *Suffix already present*. The adjectival form itself includes a suffix which is incompatible with the suffixes which form property terms, as with adjectives in *–esco* which can only take the suffix *–mente* to form adverbs, e.g. *carnavalesco* "carnivalesque".

In Correia (1999), a property term is defined as a noun which is, prototypically, derived from an adjective, as explained above, and can be paraphrased as 'the fact of being X', where X is the adjective. This can be illustrated by the following cases:

belo > *beleza*, "beautiful > beauty"
valente > *valentia*, "brave > braveness"
escuro > *escuridão*, "dark > darkness"
solene > *solenidade*, "solemn > solemnity".

Prototypical property terms in Portuguese are derived from adjectives using a set of suffixes (see above), varying in productivity and/or availability.[4] The selection of a certain suffix may depend on a variety of factors such as the etymological, morphological or phonological characteristics of the base, the characteristics of the property itself (human/non-human, physical/behavioural, inherent/acquired), or even the way the speaker intends to present the particular property (conceived as subjective, stereotypical or objective). However, it was verified that not all derived property terms correspond to this structure of adjective plus suffix. There are also property terms derived from nouns (*ciganagem* < *cigano* "gipsy"), and from verbs (*contentamento* < *contentar* "to become / to make someone happy"). In addition, there are other types of structure among property terms:

1. *Totally opaque simple vernacular and loan words*

Examples include: *honra*, *charme* and *glamour*. (In these cases, an equivalent adjective is derived from the property term, wherever possible: *honrado*, *charmoso*, *glamouroso*, as opposed to the prototypical process in which the adjective has the simple form.)

[4] In this paper, the productivity of a particular process is measured by the number of derived forms produced, while availability means the capacity of a given process to give rise to neologisms in the language under analysis.

2. *Complex words non-analyzable in Portuguese*

These can be either from Latin words which suffered phonological change (e.g. *maldade* < Lat. *malitate*-), or complex forms, usually borrowed ones, in which the base or the affix can be identified, but not both (*consumerismo* < Eng. *consumerism*).

There is also a very restricted number of property terms resulting from deadjectival conversion. This process, however, is only used in the Portuguese language when a particular adjective cannot take a suffix (such restrictions can be phonological, morphological, lexical or semantic). This is, for instance, the case with *naïf* "naive, naivety" and *oco* "empty, emptiness".

From the semantic point of view, and according to Riegel (1985:80-81) and Galmiche and Kleiber (1996:27-28), property terms depend ontologically on other entities. Occurrences of *darkness*, for example, are not referentially independent, but can only occur as a property of another entity, and, therefore, in a dependent relationship.

Properties also have the facility to occur partitively. In other words, they can be used in one of two ways. They can be understood as continuous, that is referring to the abstract property in general, independently of any specific occurrence (for example, the darkness of night-time), or they can be understood as being appropriate to a number of different but specific occurrences which are non-continuous (for example, the darkness of particular nights). Property terms are also uncountable nouns, denoting intensive entities (as opposed to extensive), that is entities which, even when increasing or decreasing, do not take up more or less time or space.

It is common to distinguish properties from states by reference to the dimension of time. A property is permanent, whereas a state is a property exhibited only for a certain period of time. The Portuguese language, like Spanish, has the pair of verbs *ser / estar* (both corresponding to the English verb 'to be'), the former indicating a state, and the latter a property. Thus, the difference between states and properties is marked syntactically rather than morphologically in these languages.

It is the dimension of space, however, which constitutes one of the main differences between strict property terms and colour terms.

3. *Colour terms*

Although colours are generally considered to be the most noticeable property of an object, the research verified that colour terms in European Portuguese are not, in fact, strict property terms, since they present particular morphological structures and specific semantic and syntactic behaviour.

As pointed out by Van de Velde (1996a:146-158) for French, colour terms have a special relationship with the dimension of space. Like property terms, colour terms resist the formation of plurals, behaving as uncountable nouns, but, in intensive contexts, they behave differently from property terms. This finding is also valid for the Portuguese language.

When the occurrences of other property terms are compared with those of colour terms, it is evident that Portuguese treats the latter nouns as entities anchored to the dimension of space, behaving like true mass nouns. The difference between the two becomes apparent when compared with their adjectival usage. Consideration of the following examples will make these claims clearer:

(1) a. *Há muita* ***nostalgia***$_{N}$ *nessa melodia.*
"There is a lot of nostalgia in this melody."
b. *Há mais* ***nostalgia***$_{N}$ *nessa melodia do que na outra.*
"There is more nostalgia in this melody than in the other one."
(2) a. *Esta melodia é muito* ***nostálgica***$_{Adj}$.
"This melody is very nostalgic."
b. *Esta melodia é mais* ***nostálgica***$_{Adj}$ *do que a outra.*
"This melody is more nostalgic than the other one."
(3) a. *Há muito* ***branco***$_{N}$ *neste quadro.*
"There is a lot of white in this painting."
b. *Há mais* ***branco***$_{N}$ *neste quadro do que no outro.*
"There is more white in this painting then in the other one."
(4) a. *Este quadro é muito* ***branco***$_{Adj}$.
"This painting is very white."
b. *Este quadro é mais* ***branco***$_{Adj}$ *do que o outro.*
"This painting is whiter than the other one."

When naming properties with adjectives (sentences 2 and 4), *nostálgico* and *branco* name properties and colours in the same way, that is as if they were intensive entities. However, when naming properties with nouns (sentences 1 and 3), *nostalgia* and *branco* behave differently:

nostalgia still denotes an intensive entity. Saying that *há muita nostalgia nessa melodia*, "there is a lot of nostalgia in this melody", means that the melody in question presents a very intense nostalgia, and saying that *uma melodia tem mais nostalgia do que outra*, "one melody has more nostalgia than the other", means that the former has a more intense nostalgia than the latter.

branco denotes a property as an extensive entity. Saying that *há muito branco num quadro*, "there is a lot of white on this painting", means that a large part of its surface is covered with white, and saying that *um quadro tem mais branco do que o outro*, "one painting is whiter than the other", means that this

painting presents a larger percentage of its surface covered with the colour white than does the other one.

On the other hand, when a property noun corresponding to a colour adjective is formed with a suffix, it continues to refer to an intensive entity, as can be seen in sentence (5).

(5) a. *A **brancura** deste quadro é excessiva*.
"The whiteness of this painting is excessive."
b. *Este quadro apresenta uma **brancura** impressionante*.
"This painting exhibits a striking whiteness."

Colour nouns are also different from property nouns from the morphological point of view. While property nouns are prototypically derived by suffixation, as mentioned above, and very rarely result from conversion processes, colour nouns are always deadjectival nouns resulting from conversion (cf. *o branco* "white", *o negro* "black", *o azul* "blue", *o vermelho* "red", *o amarelo* "yellow", *o laranja* "orange", *o castanho* "brown", *o turquesa* "turquoise", and so on). Hence, colour nouns and adjectives are homonyms, and can only be distinguished by syntactical context, in particular by the use of the masculine article before the nouns.

Thus, it is clear that colour terms not only have a specific syntactical and semantic behaviour different from that of property terms, but they also present different prototypical morphological structures. These facts reinforce one of the main principles guiding my work: form and meaning are both crucial factors for the configuration of a language and cannot be considered and studied separately.

4. *The semantic field of colour in European Portuguese*

As was previously stated, in the Portuguese language colour nouns and adjectives present the same form, which means, from a morphological point of view, that in their construction there have been conversion processes. The direction of these conversions is rather controversial; however, in this paper, I will postulate specific directions, based on the research in constructional morphology developed by Danielle Corbin and presented in previous work (Corbin 1987; 1997; Corbin & Corbin 1991; Correia 2002).

Like other Romance languages, Portuguese has an eleven-category system (cf. Berlin & Kay 1969), presenting the following basic colour terms:

branco, "white"
preto / *negro*, "black"
vermelho / encarnado, "red"
verde, "green"
amarelo, "yellow"
azul, "blue"
castanho, "brown"
roxo, "purple"
rosa, "pink"
laranja, "orange"
cinzento, "grey".

As can be observed, there are two cases in which this language presents pairs of nouns available for the naming of the same colour: *preto* and *negro* for BLACK, and *vermelho* and *encarnado* for RED. To these, one could add the pair *branco* and *alvo* for WHITE; however this case is different from the others, as in fact *alvo* is not generally available and is used only in very specific types of discourse, namely in poetic language.

The distinction between *preto* and *negro* requires systematic research, although it can be said that the difference is mostly sociolinguistic, for example *negro* is probably considered to be more 'correct' and more formal among mature and older people. The case of *vermelho* and *encarnado* will be described in an interim report in Section 5.

In terms of their morphological structure there are different types of basic colour terms in Portuguese:

1. *Simple words*

Nouns and adjectives essentially naming colour although sometimes presenting other derived meanings: *branco* "white", *preto / negro* "black", *verde* "green", *amarelo* "yellow", *azul* "blue", *roxo* "purple, violet" (although behaving synchronically as a simple word, *vermelho* "red", is in fact a converted word, as will be shown in Section 5).

2. *Converted words*

Nouns and adjectives semantically derived from nouns for entities which prototypically present the appropriate colour: *castanho* "brown" / "of the colour of chestnuts", *rosa* "pink" / "of the colour of roses", *laranja* "orange" / "of the colour of oranges".

3. *Words derived by affixation*

Forms derived by prefixes or suffixes from the noun for the entity which prototypically presents the appropriate colour: *encarnado* "red" (the past participle of the verb *encarnar* "to incarnate", a parasynthetic verb in Portuguese, from *en-* + *carn*$_{N}$- ("flesh") + *-ar*); *cinzento* "grey" (*cinz*$_{N-}$ ("ashes") + *-ent-* = "presenting a colour similar to that of ash(es)").

Affixal derivation, conversion and compounding are morphological processes used for the construction of other, non-basic, colour terms:

4. *Affixal derivation*

This is mostly used to modify colour nouns and produce adjectives denoting shades of specific hues, as in the following examples:

acastanhado, "brownish" (from *castanho*, "brown")
amarelado, "yellowish" (from *amarelo*, "yellow")
azulão, "very intense blue" (from *azul*, "blue").

5. *Conversion*

Some colour adjectives and nouns result from conversion, as described in Section 2. The following colour nouns and adjectives present this type of structure:

turquesa$_{N}$, "turquoise" (= stone) > *turquesa*$_{Adj}$ > *turquesa*$_{N}$, "turquoise" (= colour noun)
lilás$_{N}$, "lilac" (= flower) > *lilás*$_{Adj}$ > *lilás*$_{N}$, "lilac" (= colour noun)
violeta$_{N}$, "violet" (= flower) > *violet*$_{Adj}$ > *violet*$_{N}$, "violet" (= colour noun).

6. *Compounding*

Some colour nouns and adjectives are compounds. In this group, it is worth considering several different types:

6.1 *Colour terms presenting the structure* cor de, "*colour of*", + X_{N}, X being an object name, as in the following examples:

cor de rosa, "colour of roses"
cor de laranja, "colour of oranges"
cor de café com leite, "colour of white coffee" (i.e. with milk).

6.2 *N + N compounds*, the first element being a colour noun and the second a concrete object noun. These compounds generally denote specific shades of basic colour categories, as in the following examples:

azul-turquesa or *azul-petróleo*, (literally) “turquoise-blue” or ‘petrol-blue”
verde-alface or *verde-água*, (literally) “lettuce-green’ or ‘water-green”
amarelo-canário or *amarelo-limão*, (literally) “canary-yellow” or “‘lemon-yellow”
vermelho-tijolo or *vermelho-sangue*, (literally) “brick-red” or “blood-red”.

6.3 *N + Adj*, the first element being a basic colour noun and the second a modifier. The whole compound denotes a particular shade:

verde claro / escuro, “light / dark green”
amarelo-torrado, (literally) “toasted yellow”
azul-marinho, (literally) “marine blue”
castanho acobreado, (literally) “copperish brown”
rosa suave, “light / soft pink”.

According to Carvalho (1994), the largest number of compounds of the type described in 6.2 present *azul* “blue” or *verde* “green” as their first element. This fact possibly denotes a lack of precision in the distinction between these two hues within the Portuguese speech community.

The structure and origins of different colour adjectives have consequences for their capacity to form the basis of property names in the strict sense. Briefly, it is worth noting that basic colour adjectives (see 1. *Simple words*) give rise to true property terms, derived by suffixation, which denote objectively ‘the fact of being physically X’ (X = ‘of a certain colour’):

preto > *pretidão*
negro > *negridão* / *negritude*
vermelho > *vermelhidão*
verde > *verdura*
amarelo > *amarelidão*
branco > *brancura* / *branquidão*
roxo> *roxidão*.

Although not recorded in Portuguese language dictionaries, the forms *azulidão* and *verdidão* occur on a few Brazilian websites.

Colour adjectives derived from object terms (see 2. *Converted words*), apparently do not allow the possibility of producing property terms, apart from the three occurrences of the form *rosidão* also detected on Brazilian websites. However, all colour adjectives may be the basis of behavioural property terms, formed with the suffix *–ismo*. Such formations indicate the psychological property of being / behaving in a way which can be designated by a specific colour, as can be seen in the following:

castanho, "brown" > **castanhidão / *castanhitude / *castanha,* but º*castanhismo*;[5]
rosa, "pink" > ?*rosidão / *rositude / *rosura,* but º*rosismo*;
laranja, "orange" > **laranjidão / *laranjitude / *laranjura,* but *laranjismo*;
cinzento, "grey" > **cinzentidão / *cinzentitude / *cinzentura,* but *cinzentismo*;
creme, "cream (colour)" > **cremidão / *cremitude / *cremura,* but º*cremismo*;
lilás, "lilac" > **lilasidão / *lilasitude / *lilas(it)ura,* but º*lilasismo*;
turquesa, "turquoise" > **turquesidão / *turquesitude / *turquesura,* but º*turquesismo.*

These examples include: *cinzento* "grey" > *cinzentismo*, (literally) "greyism", that is the fact of behaving in a way that can be referred to as "grey", namely introverted, dull, or sad; *laranja* "orange" > *laranjismo*, (literally) "orangeism", that is the fact of behaving in a way that can be referred to as "orange", namely as Social Democrats behave; *verde* "green" > *verdismo*, (literally) "greenism", that is the fact of behaving in a way that can be referred to as "green", namely as ecologists behave. Although not all nouns in *–ismo* are recorded in general dictionaries of the Portuguese language (for example, *cinzentismo* and *laranjismo*), all of them seem to be morphologically well-formed in Portuguese, and some of them occur on Portuguese and Brazilian websites. It has been verified that this particular suffix can be added to any base, such as compounds, derived forms, simple forms and loan words.

5. Vermelho *and* encarnado*: actual synonyms?*

The RED category is named in Portuguese by two nouns, *vermelho* and *encarnado*, both currently available in the everyday language. When asked, most Portuguese speakers will say that *vermelho* and *encarnado* denote exactly the same colour, making them exact synonyms, at least from the strict denotational point of view. To support this claim, let us take the case of Benfica's football team and club: they call themselves *encarnados*, but their main supporters call themselves *Diabos Vermelhos*, "Red Devils". As total synonymy is not common in natural languages, future research will aim to establish in what ways these two words for RED may be distinguished.

5.1 *Some structural and historical notes*

Vermelho is a cognate of French *vermeil* and of Spanish *vermejo*. *Vermelho* derives from Latin *vermiculu-*, meaning literally 'little worm'. Thus, this word names RED by metonymy. Although in Latin it first named the cochineal or

[5] In this paper, the symbol º indicates a possible but unattested Portuguese word, while the symbol * indicates an agrammatical word which does not respect the grammar of the language.

kermes insect (*Kermes vermilio Planchon*) from which a scarlet dye was extracted, there is evidence that in Late Latin the metonymic process had already taken place by which the colour was named by the object (Swearingen 2002:63). While trying to trace the coexistence and differentiation between *roxo* (purple) and *vermelho* in Portuguese, Swearingen shows that, by the middle of the thirteenth century, *vermelho* not only denoted kermes-dyed materials, but was already an unambiguously abstract colour term (Swearingen 2002:65-66).

The form *encarnado*, on the other hand, results from the lexicalization of the past participle of the verb *encarnar* "to incarnate, become flesh". According to etymological dictionaries, this form was already attested in the fifteenth century, although not before the sixteenth century as a colour term (cf. Machado 1977, s.v. *encarnado*). Thus *vermelho* is much more ancient than *encarnado* as a colour term in the Portuguese language.

5.2 *Distinguishing* vermelho *and* encarnado

From the denotational point of view, *vermelho* and *encarnado* seem to be perfectly equivalent, although, to my knowledge, no specific research has been carried out to prove this. Only a systematic and thorough enquiry can show whether these two words denote exactly the same range of the RED category, but, pending such an enquiry, this paper offers some sociolinguistic observations.

There certainly are differences between *vermelho* and *encarnado* from the sociolinguistic point of view. Native speakers will say that, at least in standard Portuguese, *encarnado* seems more acceptable than *vermelho*. Upper-class children were taught to use *encarnado* instead of *vermelho*, apparently for political reasons: before 1974, *vermelho* was commonly used to qualify Communist Party members and politics. There may also be a geographical variation marking the use of these two forms: *encarnado* is probably used more in the area of Lisbon than in other parts of the country, but the minimal dialectal research data available on this point is inconclusive.[6]

Only *vermelho* can give rise to derivatives in Portuguese; *encarnado* cannot. This fact can be explained by their morphological structure and their history: the fact that *encarnado* results from the lexicalization of an inflected form (a verbal past participle) inhibits its capacity to be the base for derived forms in this language. *Vermelho* also seems to be more readily available for

[6] I would like to thank João Saramago of the *Atlas Linguístico-Etnográfico de Portugal e da Galiza* (*ALEPG*) for supplying the currently available data.

appearances in different collocations such as *carne vermelha* "red meat", *glóbulo vermelho* "red blood cell", *músculo vermelho* "red muscle", *sinal vermelho* "red light", or *vermelho-sangue* "blood-red".

In order to verify occurrences of *vermelho* and *encarnado*, three corpora were consulted:[7] *Corpus Decor* (a specialized corpus on interior decor),[8] *Corpus Moda 60-90* (a specialized corpus on fashion),[9] and *Corpus Jornal* (a newspaper corpus).[10]

One of the most striking aspects of the data is the difference in the frequency of occurrence of the two forms. In *Corpus Decor*, there are 11 occurrences of *encarnado* and 70 of *vermelho*; in *Corpus Moda 60-90*, there are 45 occurrences of *encarnado* and 800 of *vermelho*; in *Corpus Jornal*, there are 39 occurrences of *encarnado* and 77 of *vermelho*.

It appears that the most significant differences in frequency occur in specialized discourse (in *Corpus Decor* and *Corpus Moda*), but it should be pointed out that all the occurrences of *encarnado* in *Corpus Jornal* refer to the Benfica football team and club.

In terms of collocations, the corpora *Decor* and *Moda* do not present any significant data either on *vermelho* or on *encarnado*. In the case of *Corpus Jornal*, however, while it includes no specific collocations for *encarnado*, the following examples appear for *vermelho*: *cartão vermelho* "red card", *cravos vermelhos* "red carnations", *Cruz Vermelha* "Red Cross", *diabos vermelhos* "red devils", *Exército Vermelho* "Red Army", and *khmers vermelhos* "Khmer Rouge".

As has already been pointed out, this work is nothing but a first approach to the study of colour naming in Portuguese, based as it is on subject-restricted corpora, but it can already be seen that the two terms under analysis are not

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[7] I would like to thank my colleagues from the Centro de Linguística da Universidade de Lisboa, particularly Luísa Alice Santos Pereira, for having provided me with electronic data from these corpora.

[8] *Corpus Decor* was compiled in the context of Andrade's (1995) research. It comprises 380,000 occurrences taken from specialized and semi-specialized magazines, handbooks and descriptive accounts of decorative projects from the 1990's.

[9] *Corpus Moda 60-90* contains about 700,000 occurrences, mainly from general women's magazines, specialized and semi-specialized fashion magazines, handbooks for training textile workers, and catalogues, all from the 1960's to the 1990's. This corpus was compiled in the context of Carvalho's (1994) research.

[10] *Corpus Jornal* was compiled as part of the research of the Centro de Linguística da Universidade de Lisboa and contains 1,031,752 occurrences from several issues, published in 1996 and 1997, of two Portuguese newspapers with large circulations: *Diário de Notícias* and *Jornal de Notícias*.

strict synonyms and are not even homofunctional in the Portuguese language. Although *vermelho* and *encarnado* denote the same colour, *vermelho* is, in fact, used more often to name RED, it can combine more easily with other words, it can be the base for derivatives and compounds, and it has a much higher frequency of occurrence than *encarnado*. *Encarnado* seems to have a more restricted usage (mostly among upper-class speakers, and mostly in the area of Lisbon), and it has no combining properties (probably due to its morphological structure). As a result, it is used much less frequently than *vermelho*. It fails as a basic colour term (Berlin & Kay 1969:6) on the grounds of contextual restriction and restricted distributional potential. For these reasons, I would claim that *vermelho* is, in fact, the only basic colour term for RED in European Portuguese.

6. *Conclusions*

This preliminary consideration of colour naming in Portuguese has been motivated by the fact that this subject has not received sufficient attention from Portuguese linguists over the last few decades. The main points made in this paper can be summarized as follows:

1. Although colour is considered one of the most significant properties of objects, from a linguistic point of view colour terms do not belong to the category of property terms.
2. Also from the linguistic point of view, colour terms constitute a distinct category of words (nouns and adjectives), which present particular syntactic and semantic behaviour along with specific morphological characteristics.
3. The Portuguese language presents at least two pairs of words with high salience for denoting basic colour categories. These are *preto* and *negro*, not studied for the moment, and *vermelho* and *encarnado*.
4. Apart from the denotative aspects not discussed in this paper, a linguistic approach has resolved the apparent synonymy of *vermelho* and *encarnado*. It has been established that *vermelho* is the only basic colour term for RED in European Portuguese.

Finally, it is clear that further investigation of colour naming in European Portuguese is needed, and it is recommended that the differences between *preto* and *negro* be investigated with a similar methodology to that employed in this paper, and also that there should be an investigation into the denotative differences between the members of both colour noun pairs.

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EVOLVING SECONDARY COLOURS
EVIDENCE FROM SORBIAN

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1. *Introduction*

Lower Sorbian and Upper Sorbian belong to the West Slavonic branch of languages, which also includes Polish, Czech and Slovak.[1] Historically, the Sorbs were in the forefront of the Slavs' push westward, and their territory gradually became encircled by German speakers. The consequence has been that these languages are isolated from the rest of the Slavonic family. There are only 55,000 Upper Sorbian speakers, and Lower Sorbian fares even worse with only 14,000 (Gordon 2005). There are no monolingual speakers in either language. This situation means that there is an urgency attached to any informant-based study of the Sorbian language. In the summer of 2000 we carried out informant work on the lexicon of Lower and Upper Sorbian. We specifically focused on the semantic field of colour for both methodological and theoretical reasons. On the one hand, there are well developed and well documented field methods for eliciting basic colour terms, and on the other, Berlin and Kay's (1969) Basic Colour Terms sequence represents a theory of colour system evolution that has been insightful for psychologists, anthropologists and linguists. Our findings suggest that the colour systems of both languages are still evolving. There is also an indication that the colour space of one category, PURPLE, is larger than expected, and we speculate that this is a direct consequence of the absence of a PINK category. This is of theoretical interest, and we compare these findings with the converse situation in Tsakhur, a Nakh-Daghestanian language spoken in Daghestan and Azerbajdjan, in which PINK is a lexicalized category, but there is no PURPLE category.

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2. *Lexicalization of colour categories*

We are using Berlin and Kay's framework here, which has been used to capture the fact that the similarities between colour systems vastly outweigh the differences. However, we acknowledge that there has been considerable disagreement in this area. Berlin and Kay's assumption of a basic perceptual colour space is not accepted by all (see, for example, Wierzbicka in this volume), but even those who disagree with Berlin and Kay regarding the origin of colour categories accept the notion of a perceptual colour space. This space may be modified ('stretched' or 'shrunk') by category learning (Özgen & Davies 2002), but these effects are relatively small (Roberson, Davies, Corbett & Vanervyver 2006).

Of the various terms denoting colour in a language, there is an identifiable set which could be described as the 'core' colour vocabulary, or the 'basic' set of terms. Working with the notion of the basic colour term, Berlin and Kay (1969) developed a theory with certain claims of universality regarding the lexical encoding of colour categories. According to their 1969 theory, there is a maximum of eleven basic colour categories, and their emergence is universally highly constrained. This is shown in Figure 1.

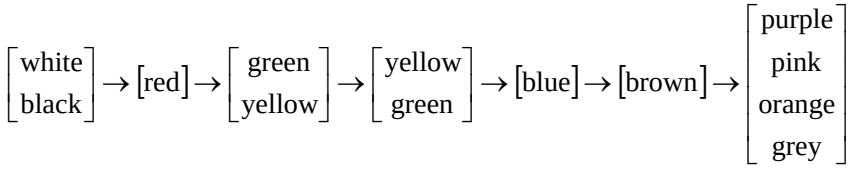

Figure 1: *Basic Colour Categories sequence (Berlin & Kay 1969:4)*

The sequence can be seen as a constraint on the evolution of basic colour categories and their associated basic terms in a language. In the lexicalization of basic colour categories, languages evolve through Stages I to VII. Hence a Stage V language with a basic BLUE term must have emerged from a Stage IV language which lacked a basic term for BLUE but had such terms for WHITE, BLACK, RED, YELLOW and GREEN. Such a language might evolve to Stage VI where a basic term for BROWN will be added. Note that at Stage VII there is no predicted ordering with respect to the lexicalization of PURPLE, PINK, ORANGE and GREY.

2.1 *Primary and derived colour categories*

A general principle is that primary colour categories are lexicalized before derived ones: primary categories are WHITE, BLACK, RED, YELLOW, GREEN and BLUE, and derived categories are perceptual blends of the primaries, for example ORANGE is perceived as a blend of RED and YELLOW. As perceptual blends, derived categories are predicated on the primaries, and, in Figure 1, they appear at stages that follow on from those of the primaries. Although the Berlin and Kay theory has undergone a number of revisions, the principle remains that derived colour categories and their terms appear only in the later stages. Figure 2 shows a revised model (Kay & McDaniel 1978; Kay, Berlin, Maffi & Merrifield 1997).

[White/Red/Yellow, Black/Blue/Green] Stage I
> [White, Red/Yellow, Black/Blue/Green] Stage II
> [Green, Black/Blue, White, Red/Yellow] Stage III
> [Red, Yellow, White, Green, Blue/Black] Stage IV
> [Black, Blue, Green, White, Red, Yellow] Stage V
> [Brown, Black, Blue, Green, White, Red, Yellow] Stage VI
> [Purple, Orange, Pink, Black, Blue, Green, White, Red, Yellow] Stage VII

Figure 2*: The revised Berlin and Kay sequence*

In the early stages, a language has composite categories, that is categories consisting of more than one primary colour, but denoted by a single basic colour term. For example at Stage I there is a term which denotes simultaneously the three primary colour categories of WHITE, RED and YELLOW. The path of colour category evolution often consists of "the progressive differentiation of colour categories" (Kay & McDaniel 1978:617). The first steps in this process involve the division of a composite category into distinct primary categories. The result of this partitioning, where it is fully carried out, is a number of distinct primary categories that are contiguous in the colour space, for example RED and YELLOW. This means that, for a Stage V language, a term for RED includes focal red but also covers areas impinging on, but not including, focal yellow. There are exceptions to this process, but Kay and Regier (2003) still claim that the generalization fits most languages.

To capture the qualitative aspects of colour terms, colour categories are viewed as fuzzy sets with the 'best' members closest to the focal point, and the 'worst' members furthest away. The boundary of a colour category is fuzzy, and is ultimately set by the focal point of the contiguous category. A second step of category differentiation, where taken, is to distinguish as separate categories the regions where colour categories meet, and these then constitute

the derived categories. The category between YELLOW and RED is ORANGE. This evolutionary sequence describes a very common route, but by no means the only one. Davies et al. (1992), for example, describe the colour system of Setswana, a Bantu language spoken in Botswana, which has simultaneously a green-blue ('grue') composite term and a basic term denoting BROWN. Again using fuzzy set theory, the 'best' ORANGE will be closest to the midpoint between RED and YELLOW. This can be seen in Figure 3, a graphical representation of the distribution of English basic colour terms used to name stimuli representing a sample of the colour space.

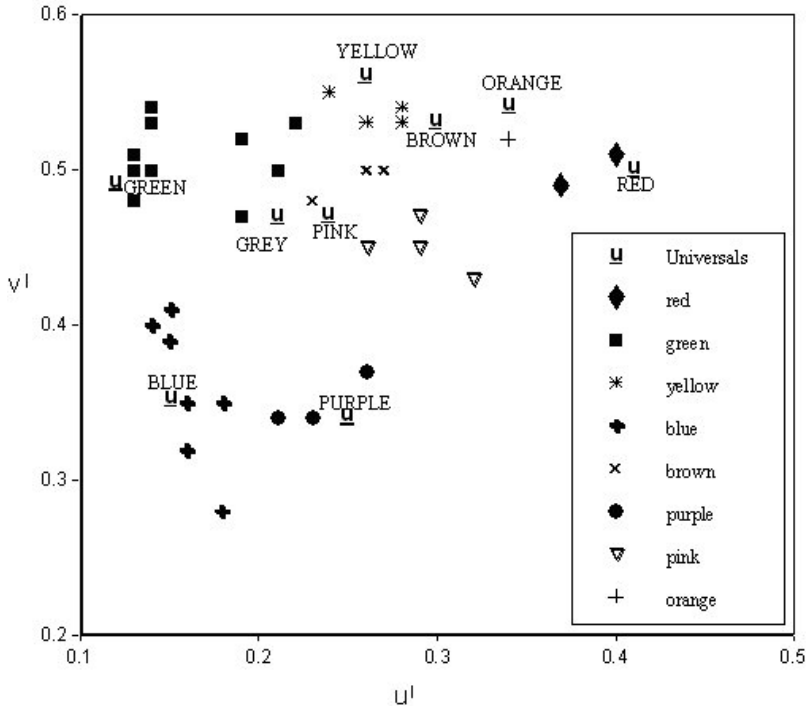

Figure 3*: English colour terms in CIE uniform chromaticity space*[2]

The **u** (universals) shows the locus of the category focus (as in Berlin and Kay 1969), the 'best' member of the category in fuzzy set terms. The symbols show the loci of the stimuli, with the symbol's interpretation in the legend at the

[2] For details of CIE uniform chromaticity space, see Davies, Sosenskaja & Corbett (1999:202).

right-hand side. The stimuli closer to the focus are 'better' members of the category. For ORANGE the universal is clearly at midpoint between focal YELLOW and RED. A prediction from the model is that Stage VI and VII languages, whose derived category terms have evolved, should have a retracted primary colour space. There appears to be exaggerated evidence of this from Tsakhur where, although the term for YELLOW (*zɨrgɨn*) denotes focal YELLOW, much of the YELLOW space is covered by the ORANGE term *Gɨ|bɨn* We will see that the data from Sorbian suggest that it is not only primary colour space that is dependent on the presence of derived colour categories, but derived categories are affected by the absence or presence of other derived categories.

2.2 *Eliciting basic colour terms*

A set of tests has been developed which has been widely used to assess the salience of colour terms in a language, and these can be used to elicit the language's basic colour terms. Full details are reported in Corbett and Davies (1997). The data we present are the result of two informant based tests: the 'list task' and the 'colour naming task'. In the list task colour terms are elicited by asking informants to list as many colour terms as they can think of within a specific stretch of time. The frequency of occurrence of a colour term across informants, as well as the rank position in which it occurs on the questionnaires, are used as measures of the term's salience. Higher frequency and greater prominence in the ordering correspond to greater likelihood that the term is basic. In the naming task, colour tiles representative of the colour space are assigned a colour term by the informant. The salient terms are marked out by high frequency of occurrence and high degree of consensus in the tiles they denote.

3. *Lower Sorbian and Upper Sorbian colour survey*

The Sorbian languages are Slavonic languages spoken within Germany in a small area of Brandenburg and Saxony, west of the River Neisse and east of a line drawn north to south from Calau, Senftenberg, Kamenz and Bischofswerda (Stone 1993:593-594). The Sorbs of Upper and Lower Lusatia are descendants of one of the many tribes of the Northwest Slavs who by the seventh century had spread as far west as the Baltic (Schenker 1995:46-47). A candidate set of basic colour terms for Lower Sorbian and Upper Sorbian is given in Stone (1993:677), deduced from dictionary searches. This is given in Table 1 and serves as a starting point for our informant based study.

The list in Table 1 partially corroborates the Berlin and Kay theory in that the primary category terms have roots in the (reconstructed) proto-language, Proto-Slavonic (for details see Herne 1954; Schenker 1993:111-112). The

exception is *modry* and *módry* "blue", cognates of which are found chiefly in West Slavonic, suggesting it is a later, West Slavonic innovation (Zaręba 1954:47-49; Hippisley 2001:169-171). Regarding the derived terms, the term for BROWN (*bruny*) is the earliest attested of these terms, and was most likely a fifteenth-century borrowing from Middle High German (Schuster-Šewc 1978:74). Again, BROWN being the first derived category fits the evolutionary

Lower Sorbian		Upper Sorbian	
primary category terms		primary category terms	
běły	white	*běły*	white
carny	black	*čorny*	black
cerwjeny	red	*čerwjeny*	red
zeleny	green	*zeleny*	green
žołty	yellow	*žołty*	yellow
modry	blue	*módry*	blue
derived category terms		derived category terms	
bruny	brown	*bruny*	brown
purpurowy	purple? (crimson)	*fijałkowy*	purple
rožowy	pink	*róžowy*	pink
oranžowy	orange	*1. oranžowy*	orange
		2. pomorančojty	
1. *šery*	grey	*1. šěry*	grey
2. *šeźiwy*		*2. šědźiwy*	

Table 1: *Candidate basic colour terms of Lower Sorbian and Upper Sorbian*

model (see Section 2.1). As for the other derived categories and their terms, there is some doubt over PURPLE, since Lower Sorbian *purpurowy* denotes a crimson colour according to Stone (1993). The most recent Lower Sorbian-German dictionary, Starosta (1999), gives the German equivalent as *purpurn*, a term which denotes "crimson". There are two terms for GREY in both languages, and Stone (1993) notes that there is little distinction between them. There are also two ORANGE terms in Upper Sorbian. The psychological salience tests we carried out allow us to explore some of the questions raised by Stone's list.

3.1 *Results of the list task*

The list task was carried out on sixteen speakers of Lower Sorbian and sixteen speakers of Upper Sorbian. All informants were bilingual in German. For Lower Sorbian, six informants were female and ten male, with their ages ranging from forty-one to eighty-five years. The task was carried out in Cottbus and the surrounding villages.[3] For Upper Sorbian, nine informants were female and seven male, with ages ranging from thirty-three to fifty, as well as one seventeen year-old. All informant work was carried out in Bautzen.[4] Tables 2 and 3 give the Sorbian terms elicited (at least three times).

In Table 2 (Lower Sorbian), the primary category terms suggested by Stone are all placed within the eleven most frequently occurring terms, and, with the exception of the terms for BLUE and RED, are the highest ranking terms. For the derived terms, there appears to be confirmation that *bruny* is the basic BROWN term, and, of the two GREY terms in Stone's list, *šery* is within the eleven most frequently occurring terms, while *šeźiwy* does not appear. The list task also suggests that the basic PURPLE category term in Lower Sorbian is not *purpurowy* (as in Stone's list) but *lylowy*, which appears on every list bar one. The low frequency of *rožowy* "pink" casts doubt on the basicness of this term, as does that of the term given for ORANGE (*oranžowy*). Finally, we should note that there are two terms for BLUE in the list, *modry* and *płowy*. The latter is restricted to certain villages north-west of Cottbus, and is reported in Fasske, Jentsch and Michałk (1972:119) as being a dialectal equivalent of *modry*.[5] At this stage, the conclusion would be that Lower Sorbian has nine basic colour terms (using Berlin and Kay's definition), with emergent terms for the PINK and ORANGE categories.

From Table 3 (Upper Sorbian) we can see that there are nine terms with a frequency of over 80%, and these are all terms appearing in Stone's list. As with Lower Sorbian, only the first of Stone's terms for GREY, *šěry*, has a high frequency. And, also as with Lower Sorbian, the PINK category term, *róžowy*, is marginal, with a frequency of 62.5%. The ORANGE term, *oranžowy*, has a very low frequency of 37.5%, and there is no appearance of the alternate ORANGE term, *pomorančojty*.

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[3] We are very grateful to Madlena Norberg for helping to coordinate the Lower Sorbian informants.

[4] Thanks to Gerald Stone, who provided the Lower and Upper Sorbian translations for the questionnaire.

[5] For a fuller discussion of *płowy* as a Lower Sorbian colour term see Steenwijk (2000).

On the evidence so far, we reach the following tentative conclusion. Both Lower Sorbian and Upper Sorbian have basic terms for all the Berlin and Kay colour categories, except for ORANGE and possibly PINK. A difference between the languages occurs in the PURPLE category where Lower Sorbian has the term *lylowy* and Upper Sorbian uses the term *fijałkowy*.

term	gloss	frequency		rank
		occurr.	as %	
běły	white	16	100.00	2.5
carny	black	16	100.00	2.5
zeleny	green	16	100.00	2.5
žołty	yellow	16	100.00	2.5
bruny	brown	15	93.75	6.0
lylowy	purple	15	93.75	6.0
šery	grey	15	93.75	6.0
cerwjeny	red	14	87.50	8.0
modry	blue	13	81.25	9.0
rožowy	pink	9	56.25	10.5
płowy	blue	9	56.25	10.5
swětłomodry	light blue	7	43.75	12.0
oranžowy	orange	6	37.50	13.0
šamnozeleny	dark green	4	25.00	15.5
šamnomodry	dark blue	4	25.00	15.5
swětłozeleny	light green	4	25.00	15.5
pisany	coloured	4	25.00	15.5
fijałkowy	purple	3	18.75	21.0
pinkowy	pink	3	18.75	21.0
šamnobruny	dark brown	3	18.75	21.0
šamnocerwjeny	dark red	3	18.75	21.0
nazeleny	greenish	3	18.75	21.0
swětłožołty	light yellow	3	18.75	21.0
nabruny	brownish	3	18.75	21.0
wioletny	purple	3	18.75	21.0
slobrany	silver	3	18.75	21.0

Table 2: *List task; Lower Sorbian informants (N=16)*

term	gloss	frequency		rank
		occur.	as %	
běły	white	16	100.00	2.5
čorny	black	16	100.00	2.5
žołty	yellow	16	100.00	2.5
fijałkowy	purple	16	100.00	2.5
čerwjeny	red	15	93.75	6.0
zeleny	green	15	93.75	6.0
bruny	brown	15	93.75	6.0
módry	blue	13	81.25	8.5
šěry	grey	13	81.25	8.5
róžowy	pink	10	62.50	10.0
swětłomodry	light blue	8	50.0	11.0
swětłozeleny	light green	7	43.75	12.5
ćmowozeleny	dark green	7	43.75	12.5
ćmowomodry	dark blue	6	37.50	15.0
oranžowy	orange	6	37.50	15.0
swětłobruny	light brown	6	37.50	15.0
ćmowobruny	dark brown	5	31.25	17.0
złoty	gold	3	18.75	18.5
slžborny	silver	3	18.75	18.5

Table 3: *List task; Upper Sorbian informants (N=16)*

3.2 *Results of the naming task*

In the naming task informants are asked on an individual basis to name sixty-five colour tiles chosen to represent the colour space and shown in random order.[6] The same set of informants who took part in the list task also performed the colour naming task, with the single exception of one Upper Sorbian informant who only performed the list task. Tables 4 and 5 summarize the results. In the tables, the sixteen most frequently elicited terms are ranked in frequency order. Modified terms have been counted in with simplex terms, for example *swětłocerwjeny* “light red” is counted as an instance of *cerwjeny* “red”. Columns 4 to 9 are used to give a measure of consensus and are discussed below.

[6]The sixty-five tiles give an even distribution in CIE uniform chromaticity. See Davies, Sosenskaja and Corbett (1999) for details about these stimuli.

term	gloss	freq.	nmf	D 0.5	D 0.75	D 0.9	dtf	spec.
zeleny	green	165	13	10	8	7	144	0.87
modry	blue	137	11	10	4	0	121	0.88
lylowy	purple	106	10	7	0	0	76	0.72
cerwjeny	red	101	5	4	2	1	50	0.49
šery	grey	77	5	4	4	2	57	0.74
rožowy	pink	65	6	1	0	0	9	0.14
bruny	brown	62	5	4	3	2	55	0.89
žołty	yellow	62	4	3	3	3	46	0.74
carny	black	45	2	2	2	2	32	0.71
oranžowy	orange	32	3	0	0	0	0	0.00
płowy	blue	28	0	0	0	0	0	0.00
wioletny	purple	27	0	0	0	0	0	0.00
běły	white	16	1	1	1	1	15	0.94
šerozeleny	grey-green	9	0	0	0	0	0	0.00
oker	ochre	8	0	0	0	0	0	0.00
fijałkowy	purple	7	0	0	0	0	0	0.00

Table 4: *Colour naming summary; Lower Sorbian (N=16)*

From Table 4 we see that very nearly the same nine terms that performed well in the list task (Table 2) also have the highest frequencies in the naming task. The exception is *běły* "white", ranked thirteenth. This should be seen, however, as an artefact of the task, since only one tile in the sample could be described as pure white.[7] This tile was given the same label (*běły*) by over 90% of all informants, and this confirms that a simple frequency score is inadequate as a measure of salience; we also need to score consensus of use amongst informants. To do this we calculate a term's 'dominance', that is the degree to which it is used for a particular tile. The number of tiles for which a term is the most frequently used is recorded in the *nmf* column (column 4), for example *zeleny* "green" is used most frequently for thirteen tiles. Of those tiles, we distinguish those for which the term is dominant, meaning those for which *zeleny* is used in over 50% of the naming exercises. A finer analysis is also possible by distinguishing between degrees of dominance: we record separately the number of tiles for which the proportion is greater than 50% (D 0.5), the number where it is greater than 75% (D 0.75), and where it is greater than 90% (D 0.9). Thus for *zeleny* "green", we see that it is the most frequent term for

[7] The same did not happen for BLACK because *two* tiles were labelled as *carny* "black" by many of the informants, since the sample included a very dark grey tile (GRAY 8).

thirteen tiles and of these it is dominant for ten tiles. Amongst the tiles for which it is the dominant term, it has over 75% of the share of all terms offered for eight tiles and over 90% for seven. Dominance is summarized in the last column using the specificity score, which is the proportion of its total use for which it is a dominant term, that is the frequency of its uses for its dominant tiles (the *dtf* given in column 8) over the frequency of all its uses (given in column 3). For *zeleny* this is 0.87, meaning that 87% of all its occurrences represent high consensus of use amongst informants. Returning to *běły* we see that, although its frequency is lower than those of the other putative basic terms, it has the highest specificity score (0.94).

We can view the results of the naming task as further evidence that Lower Sorbian has at least nine basic colour terms, the same as those suggested by the list task. These terms have high frequency rankings and / or high specificity scores. As in the list task, the term for PURPLE is *lylowy*, the third most frequent term, and it has a high consensus index (dominant for seven out of ten of the tiles for which it is the most frequent term, and having a specificity score of 0.72). Other PURPLE category terms elicited were *wioletny* and *fijałkowy*, neither with any claim to basicness (they have low rank frequency and specificity scores of 0.00). The list task suggested that Lower Sorbian lacks basic terms for ORANGE and PINK and we find further evidence for this suggestion from the naming task. The term *oranžowy* "orange" has a low rank frequency, as well as a low consensus index. Although it is the most frequently elicited term for three tiles, it is not dominant for any of them, and this is reflected in its specificity score of 0.00. The term *różowy* "pink", on the other hand, has a fairly high rank frequency, but again it performs badly on the consensus index with a specificity of 0.14, that is there has been consensus in the term's use on only 14% of all the occasions it was used to name a tile. It is only dominant for one tile and in fact on closer inspection we see that it covers only 56% of the terms used to name the tile, in other words, it is barely dominant.

The results of the naming task for Upper Sorbian are given in Table 5. The candidate basic terms suggested by the list task for Upper Sorbian also perform well in the naming task when we take both frequency and consensus into account. There is strong evidence that the PURPLE category principal term in Upper Sorbian is *fijałkowy*, based on both frequency, where it is the third most frequent term, and consensus, where it is dominant for eight tiles, and has a specificity score of 0.76. From the list task, as with Lower Sorbian, doubt surrounds the basic status of terms for the Upper Sorbian PINK and ORANGE categories. In the naming task, the PINK category term (*różowy*) has a low

term	gloss	freq.	nmf	D 0.5	D 0.75	D 0.9	dtf	spec.
zeleny	green	142	13	9	8	6	123	0.87
módry	blue	140	13	9	7	6	119	0.85
fijałkowy	purple	116	11	8	3	1	88	0.76
šěry	grey	75	5	5	4	2	66	0.88
čerwjeny	red	72	5	4	3	1	51	0.71
oranžowy	orange	55	4	3	2	0	35	0.64
bruny	brown	49	4	3	3	1	40	0.82
žołty	yellow	44	3	3	3	1	39	0.89
čorny	black	35	2	2	1	1	25	0.71
różowy	pink	32	6	1	0	0	8	0.25
lila/lylowy	purple	18	0	0	0	0	0	0.00
běły	white	17	1	1	1	1	14	0.82
modrozeleny	blue-green	11	1	0	0	0	0	0.00
pink	pink	9	1	0	0	0	0	0.00
modrošěry	blue-grey	7	1	0	0	0	0	0.00
purpurowy	purple	6	0	0	0	0	0	0.00

Table 5: *Colour naming summary; Upper Sorbian (N=15)*

frequency and a low specificity score (0.25). It is dominant for one tile, but only marginally so, representing only 53% of the terms used to name tile RO-T3. This is further evidence against the existence of a basic term for PINK in Upper Sorbian. While, in the case of PINK, the evidence from both tests appears to be compatible, this is not the case with ORANGE. We may recall that in the list task (Table 3) *oranžowy* performed particularly badly: it had a frequency of 37.5% and a ranking of 15, pushing it well beyond the bounds of the group of terms considered basic. From Table 5, however, we see that it has a strong frequency ranking of sixth most frequent and is dominant for three tiles, two of which it dominates at over 75%. This is reflected in a strong specificity score of 0.64.

4. *Colour category lexicalization and its effect on the colour space*

The results of the tests outlined above suggest that the two languages under investigation lack a basic term denoting PINK, and that Upper Sorbian probably has a basic ORANGE term, whereas in Lower Sorbian this term is emergent at best. The most interesting finding, however, is the effect of a weak concept of PINK on the colour space. When we translate the results of the naming task into a graph representing the CIE uniform chromaticity space, the purple region appears to be larger than expected. In section 2 we outlined the progressive differentiation approach to basic colour term evolution, and made the point that,

since primary categories are contiguous, the colour space of a primary term is larger in the absence of a related derived term. In the case of both Lower and Upper Sorbian, the absence of a basic derived term for PINK seems to affect the colour space of another derived term, that for PURPLE, by letting it expand beyond its expected margins. This is shown in Figure 4 for Lower Sorbian.

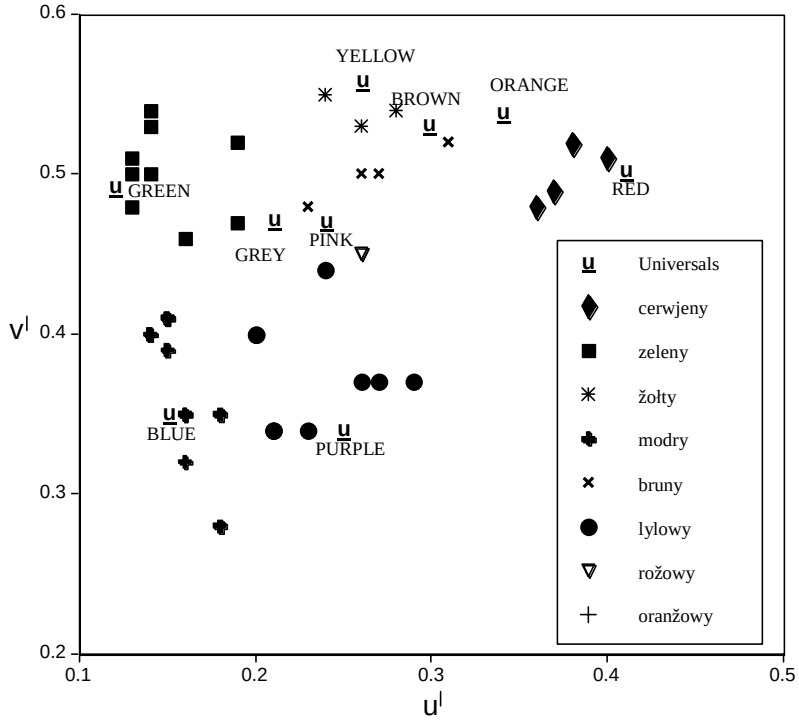

Figure 4: *Loci of Lower Sorbian terms in CIE uniform chromaticity space*

The legend for Figure 4 gives the names of the eleven candidate colour terms and a corresponding symbol. The symbols plot the coordinates of the tiles which the term dominates. Focal points are denoted by **u**. The graph for Lower Sorbian is very similar to that of English, as discussed in Section 2 (see Figure 3). The main differences are found in the purple region, which for Lower Sorbian extends nearly as far as focal pink. The purple space is much more restricted for English. Interestingly, the small extent of the pink area does not have a similar effect on the brown colour space, which is almost identical to that of English.

Figure 5 gives the CIE graph for Upper Sorbian. As has been mentioned, the case for a basic PINK term is even weaker in Upper Sorbian than in Lower Sorbian.

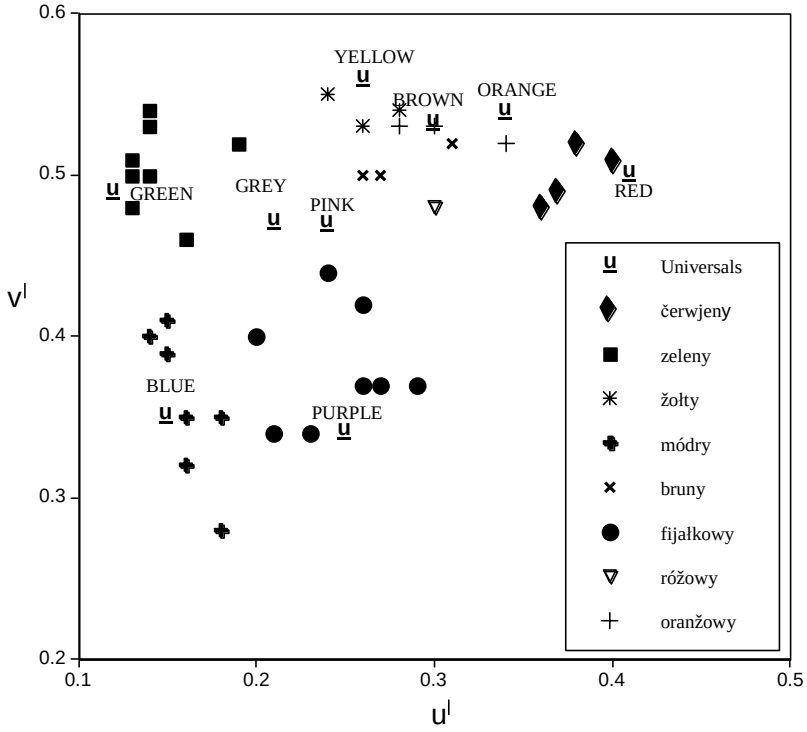

Figure 5: *Loci of Upper Sorbian terms in CIE uniform chromaticity space*

There is only one tile for which the PINK term is dominant, and it corresponds to a point that is some distance from the focus of pink. The graph clearly shows that the expanded purple region is even more exaggerated here than it is for Lower Sorbian, strongly suggesting that the expanded space is the result of a small PINK area. As for ORANGE in Upper Sorbian, the term *oranžowy* was identified with three tiles in the naming and mapping tasks, and we can see from the graph that one occupies a point in the colour space where a basic ORANGE term might be expected, although the others are closer to the yellow region.

The Sorbian data indicate a dependence of the purple colour space on the evolutionary status of the PINK category. This raises the question of whether another colour system with a basic PINK category but without one for PURPLE

might alternatively demonstrate a dependence of the pink colour space on a still-evolving PURPLE category. Tsakhur has such a colour system, according to results using the same elicitation methods and the same tile set as were used for Upper and Lower Sorbian (Davies, Sosenskaja & Corbett 1999). Figure 6 is the CIE graph of the results of the Tsakhur naming task, in which only tiles for which the terms were dominant have been plotted.

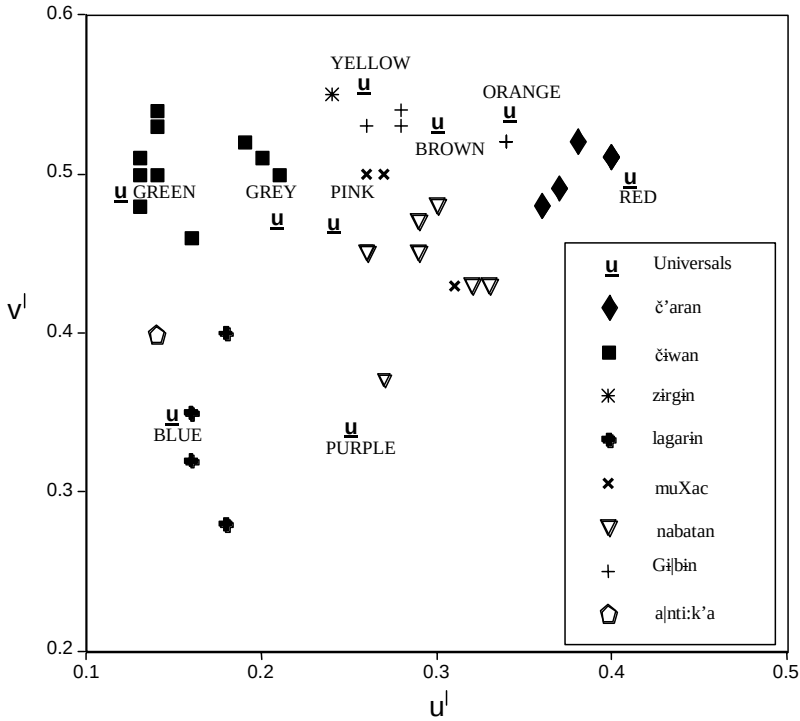

Figure 6: *Loci of Tsakhur terms in CIE uniform chromaticity space*

Key: *č'aran* "red", *čɨwan* "green", *zɨrgɨn* "yellow", *lagarɨn* "blue", *muXac* "brown" *nabatan* "pink", *GɨbɨnGɨbɨn* "orange", *a|nti:k'a* "turquoise"

The colour space occupied by the Tsakhur terms is broadly similar to that of English (Figure 3). Where it differs is in regard to the purple and pink areas. In Tsakhur, the candidate term for PURPLE (*žangarɨn*) has no tiles for which it is dominant, hence no term covers the purple space on the graph. What is clearly seen is that the term for PINK (*nabatan*) extends well into what would be the purple space, as well as covering the pink space in the expected way.

5. *Conclusion*

To summarize, our informant work presents evidence that Upper and Lower Sorbian have colour systems that are still evolving. Both lack a basic term for PINK, and, whereas Lower Sorbian lacks a basic term for ORANGE, Upper Sorbian seems to have recently acquired one. An interesting theoretical finding is that the colour systems of two related languages (Upper Sorbian and Lower Sorbian) and one unrelated language (Tsakhur) appear to show the same phenomenon: the presumed colour space of a derived category is a function of another derived category. In each case, the derived categories in question are PINK and PURPLE. It is already known that primary colour space can retract upon the emergence of a basic derived category; Figure 6 shows this dramatically for Tsakhur YELLOW in the face of a strong ORANGE. Our findings suggest that, like the primary categories, the later derived categories may also require further evolutionary processes before they themselves are fully settled.

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COLOUR TERMS IN NOVA SCOTIA

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1. Introduction

Just over two centuries ago, speakers of Scots Gaelic (ScG) began emigrating in large numbers to Cape Breton in the Canadian province of Nova Scotia. According to the website of the province's international festival (http://www.celtic-colours.com), more than 25,000 emigrants from the Highlands and Islands of Scotland settled in Cape Breton between 1775 and 1860. Many of their descendants continue to speak Scots Gaelic, either as native speakers or as learners. This paper examines the variety and scope of the basic and other colour terms used by speakers – and singers – of Cape Breton Gaelic (CBG) from the late 1800s through to the 1950s.[1]

2. Old Irish and Middle Irish colour terms

I have previously demonstrated (Lazar-Meyn 1979; 1987; 1994) that there were several sets of colour terms in use in Old and Middle Irish. These included five basic colour terms (using Berlin and Kay's (1969) definition of a BCT), which can be glossed approximately:

dub, "black"
bán, "white"
derg, "red"
glas, "grue" (denoting both green and blue)
buide, "yellow".

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[1] I am grateful to Carole Biggam for having sought out persons working on the Celtic colour systems to participate in PICS04, which I note was held in the colourful city of Glaschu. I am further indebted to her for her patience, and even more so for her polite reminder of the range of the Welsh colour term *glas*, which is now correctly described.

Given the broad range of their referents, these terms could, apparently, be used in any context.

Based on his review of the same data, Robert MacLaury (personal communication, January 31, 2003) would add to this list a sixth basic colour term, *gorm*, "focal blue, extending into dark brown and black", and would define *glas* as "focal green, extending into grey". However, given the existence of further colour terms, principally concerned with saturation and brightness, in the Old and Middle Irish periods, *gorm* would appear to be a better fit therein:

finn, "bright, fair"
gel, "dazzling white"
gorm, "dark and shining"
úaine, "verdant; bright green"
donn, "unsaturated brown through to grey"
odor, "bright brown"
corcair, "scarlet".

A third set of colour terms is contextually restricted:

rúad, "red hair / complexion, dried blood"
líath, "grey, primarily of hair"
cíar, "jet-black" (found only in alliterative phrases)
flann, "blood-red" (found only in alliterative phrases)
lachtna, "milk-coloured [wool]"

and possibly
partaing, "Parthian [leather], scarlet [lips]".

3. Cape Breton Gaelic colour terms

Data were gathered from three texts (Creighton & MacLeod 1979; MacDonell 1982; MacNeil 1987), which are described in more detail below. The data include narratives, proverbs, stories and songs. When more than one song in a text or one reference in a story includes the same pair of noun + colour term, I have given only one example from that text.

Some of the songs were composed in Scotland, whilst others are local to Cape Breton. Colour words are almost never necessary to a rhyme so there is rarely any difficulty with them. For storytellers, there is not even a syllabic limitation on the choice of a colour word, whereas in songs the metre may require a specific number of syllables or stress pattern. With this one caveat, colour choices thus give useful insights into the colour system of the composers and singers. When the same person, animal or object is described by different

colour terms within the same song or story, I have noted this by '=' and a reference to the other colour term used.

One of the circumstances in which colour terms cannot be easily changed is when they form contrasting sets, as in a group of people with different hair colours. These examples are of particular interest because of the light they shed on the structure of the colour system.

All three texts include English translations, some more literal than others. I have been guided by them, but have not relied on them. I have deliberately left colour terms untranslated, other than to note in brackets when translators indicate that a colour term refers specifically to hair colour.

3.1 The MacDonell Data

These data are derived from songs composed from the late 1800s through to the 1930s.

dubh

'na ròmachan dubh, 'as a *d.* caterpillar'

bàn

le 'phocan bàn, 'with his *b.* sack'
an còta bàn, 'the *b.* coat [snow]'
faoileagan bàna, '*b.* gulls'

dearg

ùbhlan … dearga, '*d.* apples'
damh dearg, '*d.* stag'
dearg daite 'n gruaidh, '*d.* colour in their cheeks'

glas

ùbhlan glas, '*g.* apples'
dhaoine … glas, 'at *g.* people'
Strathghlais, (lit.) '*g.* river-valley' (place-name)

gorm

boineid ghorm, '*g.* bonnet'
nach 'eil na chluintean 'tha fad as cho gorm, 'far-away fields are not so *g.*'
fùdar gorm, '*g.* [gun]powder'

uaine
bidh gach àilein ‘us cluain ‘sealltainn uain’-fheurach, ‘each meadow and plain is a grassy-*u*. sight’

fionn
mogais chais[fh]ionn, ‘*f*.-soled moccasins’

geal
neòineanan geala, ‘*g*. daisies’

ruadh
a bhràthair ruadh, ‘his *r*.[-haired] brother’
madadh-ruadh, ‘*r*. fox’
an fheòrag-ruadh, ‘the *r*. squirrel’
a’ chrodh ruadh, ‘the *r*. cattle’
a’ Mhuir Ruadh, ‘the Red Sea’

liath
tha mo cheann-sa…liath, ‘my head is *l*.’
‘s a liath an aois mi, ‘I have become *l*. with age’

donn
bhoiteag dhonn, ‘brown earthworm’

cairtidh
dhaoine cairtidh, ‘at *c*. folk’

dubhghorm
boineid … dubh-ghorm, ‘*d*.-*g*. bonnets’
duilleach dubh-ghorm, ‘*d*.-*g*. foliage’

3.2 The MacNeil Data

Joe Neil MacNeil was born in 1908 and, from the age of six months, he was raised in Middle Cape, Cape Breton County. A native speaker of Cape Breton Gaelic, he preferred speaking that language to English, and taught himself to read it. John Shaw collected stories from MacNeil from the 1960s through to the 1980s.

bàn

cù beag dubh … agus … ball bàn, ‘a little *d*. dog with a *b*. spot’ = *geal,* below

each bàn na cluais’ dheirg, ‘*b*. horse with *d*. ears’

an Dotair Bàn, ‘the *b*.[-haired] Doctor’

also used as a masculine byname.

geal

am ball geal, ‘the *g*. spot’ = *bàn*

an t-uan cho geal rì mhàthair ‘s a mhathair cho geal ris an t-sneachda, ‘the lamb as *g*. as its mother and its mother as *g*. as snow’

ceithir casa geala a bh’air an each, ‘a horse that had four *g*. legs’

dubh

cù beag dubh … agus … ball bàn, ‘a little *d*. dog with a *b*. spot’

smeuran dubha, ‘blackberries’

bàta caol dubh, ‘*d*. longboat’

dubhadh, ‘blacking’

Dhubhairt, ‘of Duart’, (lit.) ‘*d*. stone’

dubh-bhròn, ‘*d*. sorrow’

dubh, dorcha, ‘*d*., dark (outside)’

also used as a masculine name element and byname.

dearg

each bàn na cluais’ dheirg, ‘*b*. horse with *d*. ears’

fuil dearg, ‘*d*. blood’

Na-hEileannan Dearga, ‘the Red Islands’

ruadh

an Còcaire Ruadh, ‘the *r*. Cook’

am madadh ruadh, ‘the *r*. fox’

also used as a masculine byname.

fionn

used only as a masculine name element.

liath

fear liath, ‘*l*.[-haired] man’

bodach liath, ‘*l*.[-haired] old man’ = *glas*

glas

talamh glas, '*g*. earth'
feur glas, '*g*. grass'
bodach mór glas, 'a large, *g*.[-haired] old man' = *liath*
pìos do sheann phaipear glas, 'a piece of old *g*. paper' (parcel wrapping paper)
an t-uisge tana, glas, 'the thin, *g*. water' (poor chicken soup stock)
an còta glas, 'the *g*. coat'
na clachan glasa, 'the *g*. stones'
aig an each ghlas, 'by the *g*. horse'
a' Chòta Liathghlais, 'the *L*.-*g*. Coat'

uaine

a' Chòt' Uaine, 'the *U*. Coat'
tullach uaine, '*u*. hillock'

donn

dà dhuilleig dhonn, 'two *d*. leaves'
also used as masculine name element.

3.3 Creighton and MacLeod Data

Helen Creighton, Doreen Senior and Calum MacLeod collected the songs in which these colour words are found at various times between 1933 and 1956.

dubh

gille dubh, '*d*.[-haired] lad'
nighean dubh, '*d*.[-haired] maiden'
mo chasan dubh, 'my feet [are] *d*.' (swan)
coileach dubh, 'black-cock'
an alltan dubh, 'the *d*. brooklet'
'n t-Eilean Dubh, '*D*. Island'
Sgìr Dhubh, (placename)
luchd nan còtaichean dubha, 'a company of *d*.-coats'
luchd nan musgaidhean dubha, 'a company of *d*. muskets'
na poite duibhe, 'of the still', (lit.) '*d*. pot'
lionn-dubh, 'dejection', (lit.) '*d*. liquor'
also used as a masculine name element and byname.

bàn

am buachaille bàn, ‘the *b*.[-haired] herdsman’
an gille bàn, ‘the *b*.[-haired] lad’
do m’chruinneig bhàn, ‘for my *b*.[-haired] maiden’
nighean bhàn, ‘*b*.[-haired] maiden’
o’n té bhàin, ‘from the *b*.[-haired] woman’
do mhnaoi an taobh bhàin, ‘to the *b*.-flanked woman’
òigh … bhànbhasach, ‘*b*.-palmed maiden’
fiasag bhàn, ‘*b*. beard’
a’ chuailein bhàin, ‘of the *b*. hair’
maghan bàna, ‘*b*. fields’
coirce bàn, ‘*b*. oats’
mu do chladaich bhàna, ‘around thy *b*. shores’
tighean bàna, ‘*b*. houses’
bothan bàn, ‘*b*. hut’
‘n long bhàn, ‘the *b*. ship’
na cairtean … breaca, bàna, ‘the spotted, *b*. cards’
‘n a d’phlaideachan … bàna, ‘in thy … *b*. blankets’
fùdar bàn, ‘*b*. [gun]powder’
also used as a masculine byname.

dearg

a gruaidh bha cho dearg ris na ròsan, ‘her cheeks, that were as *d*. as roses’
aghaidh mheanbhdhearg, ‘face slightly blushing’
an làmh dhearg, ‘the *d*. hand’ (crest)
piobair dearg, ‘*d*. pepper’

glas

fear glaschinn, ‘*g*.-headed man’
each glas, ‘*g*. horse’
air bhàrr nan tonn glasa, ‘on the crest of the *g*. waves’
ubhall ghlas, ‘*g*. apple’
fraoch glas, ‘*g*. heather’
as a’ chuilbhear chaol, ghlas, ‘from the thin, *g*. gun’
Strath Ghlais, ‘*G*. River-valley’
Glasacho, ‘Glasgow’

buidhe
chùil bhuidhe, ‘*b*.-haired’
‘n t-eorna buidhe, ‘the *b*. barley’
gach lusan ‘s neòinean … fannabhuidh ‘s gorm, ‘each flowerlet and daisy … pale-*b*. and *g*.’

gorm
sùil ghorm, ‘*g*. eyes’
do bhruachan gorm, ‘thy *g*. banks’
air an talamh ghuirm, ‘on the *g*. ground’
gach lusan ‘s neòinean … fannabhuidh ‘s gorm, ‘each flowerlet and daisy … pale-*b*. and *g*.’
boineid ghorm, ‘*g*. bonnet’
also used as a masculine byname.

uaine
tìr uaine, ‘*u*. land’
‘n an tulaich’ uaine, ‘the *u*. mounds’
eilean uaine, ‘*u*. island’
an innis uaine as gile tràigh, ‘the *u*. island of *g*. beaches’
air bhàrr nan tonn uaine, ‘on the crest of the *u*. waves’
mhuir uaine, ‘*u*. sea’

geal
do’n duine gheal, ‘to the *g*. [non-aboriginal] man’
mo chailin geal, ‘my *g*. girl’
gile do bhràighe na’n canach … sneachda, ‘thy bosom [is] more *g*. than the cotton-sedge … snow’
mi-fhéin glégheal, ‘[I am] myself very *g*.’ (swan)
mo bhrùid geal, ‘my *g*. beast’ (horse)
bradan tarr(a) gheal, ‘*g*.-bellied salmon’
‘s tu bu ghile na’n anart, ‘thou wert more *g*. than [bleached] linen’
‘s tu bu ghile na’n fhaoileig, ‘thou wert more *g*. than the seagull’
an innis uaine as gile tràigh, ‘the *u*. island of *g*. beaches’
bha i ‘n a caoire geala, ‘it [the gale] was foaming-*g*.-crested’
luchd nan claidheamnan geala, ‘a company of *g*. swords’
‘s an fheasgar chiùin-ghil, ‘on a calm, *g*. evening’

fionn

an crodh guaillfhionn, ‘the *f*.-shouldered cattle’
Drimindown = Druimfhionn donn, ‘*f*.-backed *d*. [cow]’
also used as a masculine name element.

liath

bodaich ‘s an cinn air liathadh, ‘old men with hair turning *l*.’
am peilear liath, ‘the *l*. bullet’

donn

ribhinn donn, ‘*d*.[-haired] maid’
nighean donn, ‘*d*.[-haired] maiden’
mo chruinneag dhonn, ‘my *d*.[-haired] maiden’
ainnir dhonn, ‘young, *d*.[-haired] lady’
an gille donn, ‘the *d*.[-haired] lad’
fear òg a’ chùil duinn, ‘young man with *d*. hair’
mo chuilean donn, ‘my *d*. hair’
nan damh donn, ‘of the *d*. stags’
’n dreathan-donn, ‘the *d*. wren’
Drimindown = Druimfhionn donn, ‘*f*.-backed *d*. [cow]’
‘n duileasg donn, ‘the *d*. dulse’
aran donn, ‘*d*. bread’
also used as a masculine name element.

ruadh

dha’n té ruadh, ‘of the *r*.[-haired] woman’
gobhain ruadh, ‘*r*.[-haired] smith’
fear ruadh, ‘*r*.[-haired] man’
fear na fiasaig’ ruaidh’, ‘man of the *r*. beard’
‘Yankaich’ ruaidh, ‘*r*. Yankees’
aighean ruadha, ‘*r*. young cows’
coinneach ruadh, ‘*r*. moss’
a’ Mhuir Ruadh, ‘the Red Sea’
luchd nan còtaichean ruadha, ‘a company of *r*.-coats’
rudhadh do ghruaidh, ‘[the] blush of thy cheek’
also used as a masculine and feminine byname.

ciar

used as a masculine byname.

sgàrlaid
le'n còtaichean sgàrlaid, 'in their *s*. greatcoats'

odhar
each odhar, '*o*. horse'

riabhach
used as a masculine byname.

dubhghorm
muir dubhghorm, '*d.-g*. sea'
luchd nan gunnaichean dubhghorm, 'a company of *d.-g*. guns [soldiers]'

liathghlas
runnach liathghlas, '*l.-g*. mackerel'

4. Conclusions

In summary, the following simplex colour terms are found in Cape Breton Gaelic, and can be given the following facile glosses:

dubh, "black"	*fionn,* "white (of cattle)"
geal, bàn, "white"	*odhar,* "brown (of horses)"
dearg, "red"	*ruadh,* "red, brown"
glas, "grue" (green+blue)	*ciar, cairtidh,* "swarthy"
buidhe, "yellow"	*riabhach,* "brindled, grizzled; grey, drab"
donn, "brown"	*sgàrlaid,* "scarlet"
uaine, "green"	*gorm,* "blue, dark green"
liath, "grey"	

These translations are inaccurate, however, insofar as they imply equivalency with basic colour categories, as used by Berlin and Kay (1969:13-14). As Wierzbicka (2005) points out, 'abstract colour terms', based solely on wavelength, are not the only form of visual descriptor. If one looks at the persons, animals, natural features and objects described by these colour terms, different patterns begin to emerge.

Bàn, fionn and *geal* are all within the ambit of the basic colour category 'white'. While their usage overlaps, the underlying Old Irish distinctions appear to remain. *Bàn* can be used for any person, place or thing that might be described in English as *white*, while *geal* tends to be used to describe referents

that have a shining or glistening aspect, or for comparisons emphasizing the *geal*-ness of the person, animal, or object. *Fionn* is found on the above lists only as a colour of animal fur and skin, and as a name element; further examples, however, might be expected to describe the colour of human skin, where a contrast is indicated between Europeans rather than between them and native Canadians.

Dearg is the unchallenged candidate for the basic colour category 'red'. *Ruadh* and *donn* are both limited to hair colour (with the exception of the related verbal form *rudhadh,* "blushing"), natural features, and items such as fabric and bread. *Odhar* is rare, and further examples would be needed to determine if it can also be extended to skin colour, as in Scots Gaelic.

A more complicated group is that of *liath, glas, gorm* and *uaine*. *Liath*, unlike its Welsh cognate *llwyd*, has tended not to be perceived as the GREY abstract colour term, since it almost always refers to grey hair. Unlike its Scots Gaelic equivalent, CBG *liath* does not appear to have extended into BLUE. *Glas* remains in its historical place as a 'grue' term, describing items such as apples, horses, 'brown' paper, and rocks. *Glas* and *gorm* have an interesting interplay, since the latter is used to describe bonnets, far-away fields where the "grass is greener", lush meadows, and dark gunpowder.

As a byname in these data, *gorm* refers solely to Donalds and MacDonalds. There is only one example of each, as opposed to the more frequent use of other colour terms as bynames. John MacInnes (personal communication, 15.06.05), an authority on Scots Gaelic oral tradition, states that the Donald of the song is also a MacDonald. He adds that there are a few traditional examples of Stewarts of Appin being described as *gorm*, and that there are supernatural beings who live in the Minch (the stretch of water between the Western Isles and the Scottish mainland) that are known as *na fir gorma*, 'the *g*. men'. However, in the sixty years since he first asked about this usage, MacInnes has never heard of any living person being described as *gorm* and none of his informants could define what *gorm* means when applied to a person. His best guess is "true black hair". The Irish usage of *gorm* to mean "swarthy, dark-skinned" does not exist in Scots Gaelic and he rejects the metaphoric meaning of "green, foolish" as unlikely to be applied to a famous clan chief by anyone who valued his life.

Glas covers the less saturated hues, literally and figuratively. (Compare the Irish song *Coinleach Ghlas an Fhómhair,* "The *G*. Stubble of Autumn"). *Uaine*, meanwhile, appears to be an abstract colour term for GREEN, used primarily for plants, and in comparisons with the colour of the sea. This usage is similar to that occurring in Cape Breton Gaelic's Brythonic cousin Middle Welsh (MW), in which *glas*, although traditionally glossed "blue", retains a meaning of

"grue", while MW *gwrm*, the cognate of *gorm*, was moribund and lost by the modern period (Lazar-Meyn 1987; 2004). *Gwyrdd*, the Middle and Modern Welsh term glossed as "green", is both cognate with and better translated as "verdant", referring specifically to foliage. In fact, Welsh speakers have begun to adopt the English loanword *grin* to fill in the 'missing' basic colour term.

Looking more closely at contexts, there is a set of colour terms that can be used for hair colour: *dubh, donn, odhar, ruadh, buidhe, liath, glas, geal, bàn* and *fionn*. *Glas*, *geal* and *fionn* are also used for skin colour, the other terms for which include *dearg* and *cairtidh*, and also *ciar, riabhach* and *gorm*, found only as bynames. Of particular interest is that *dearg*, already the apparent basic colour term for RED by the Old Irish period, is in the skin colour group along with *gorm*. Similarly, the Common Celtic term *ruadh* (compare MW *rhudd*, already being replaced as the basic colour term by Welsh *coch*) is in the hair colour group in company with other likely basic colour terms. *Bàn*, the apparent basic colour term for WHITE, is in the hair colour group, but *geal* and *fionn* (compare MW *gell*, limited to hair colour, and Welsh *gwyn*) straddle the two groups, as does *glas* (compare Welsh *glas*).

In summary, further work remains to be done. Song texts, although theoretically malleable, tend to be conservative. The present-day speakers of Cape Breton Gaelic, bathed in the influences of English and, to a lesser extent, French as languages of the community and media, may be moving towards more abstract colour term usage than that described above. But, despite a long history of contact with the colour systems of English and French, colour systems in the Celtic languages have resisted pressure to make such a change (Lazar-Meyn 2004). It would be a great loss if the influence of universal schooling, radio, television and the internet were able to wipe out alternative ways of looking at the world.

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POLITICAL UPHEAVAL AND A DISTURBANCE IN THE COLOUR VOCABULARY OF EARLY ENGLISH

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1. *Introduction*

This paper is based on two observations: firstly, that the most common word used in Old English (OE) to denote the colour blue is *hæwen* or *hæwe* (with various spellings), but the basic colour term for BLUE in Modern English (NE) is *blue*. Secondly, with the sole exception of *blue*, all the most basic colour terms of the present language are developments from their Old English equivalents: NE *white* from OE *hwit, black* from *blæc, red* from *read, yellow* from *geolo, green* from *grene, brown* from *brun* and *grey* from *græg*. Why is there no such consistency in the blue category? Why was a native colour term (*hæwen*) replaced by a borrowing from French (*bleu*, also with various spellings), while the native terms for the other colours listed above were retained?

2. *Old English* hæwe(n)

To investigate the loss of *hæwen* and adoption of *bleu*, the position of *hæwen* in the Old English BLUE category is the first consideration. This category is denoted by four simplex terms, which appear in the extant texts with various spellings, and, in some cases, with certain contextual restrictions (Biggam 1997). The lexemes are: *blæwen, glæsen, hæwen* and *wæden*. Of these words, *hæwen* is clearly dominant in the surviving texts. It has twelve times (36) the simplex occurrences of its nearest rival (*wæden* with 3), and it has seven compound terms, whereas *wæden* has none (Biggam 1997:289). While it has to be admitted that the total occurrences for all the words are rather low because of the limitations of the evidence, the comparison between *hæwen* and its rivals is significant. If both simplex and compound terms are added together for each lexeme, *hæwen* has a total of forty-three, while its nearest competitor

(now *blæwen*) has only six.[1] It is, of course, recognized and accepted that, with such small amounts of evidence surviving, the impression gained from the texts may be unrepresentative of the actual situation in the language of Anglo-Saxon England.

While it is straightforward to establish the apparent dominance of *hæwen* amongst Old English words which could denote BLUE, this does not necessarily mean that the word was a basic colour term (BCT), as defined by, for example, Berlin and Kay (1969:5-7), Crawford (1982), or Biggam (1997:86-90).[2] An evaluation of the basicness of *hæwen* has been offered elsewhere (Biggam 1997:254-256), so will only be summarized here. *Hæwen* was found not to be a hyponym, which is one qualification for BCT status. This means that *hæwen* had no superordinate colour term, as NE *scarlet* has the superordinate term, *red*. *Hæwen* was also found to be contextually unrestricted, another requirement for a BCT. In other words, it was not a specialized term, used only of, for example, dyes and pigments. *Hæwen* also satisfied the requirement of having stability of reference across categories of text, that is, its meaning appeared not to differ substantially across categories such as medical works, glossaries, Christian teaching, poetry, and so on.

Hæwen, however, fails on Biggam's last criterion for basicness, namely, stability of reference across types of vocabulary. Although the paucity of evidence makes the results less than overwhelmingly conclusive, nonetheless they show a heavy predominance of the meaning BLUE in learned texts, but an even spread across the meanings BLUE, GREY, and GREY-BLUE in popular vocabulary. The importance of the GREY element in these results is that *hæwen*'s earliest colour sense in Old English was probably a cool macrocolour, denoting BLUE, GREY, and even GREEN (Biggam 1997:303-304). The results of the survey by vocabulary types, therefore, suggests that the BLUE element in the semantics of *hæwen* had become dominant in the written usage of literate people, but probably not in other social groups. If this interpretation is correct, *hæwen* does not show stability of reference across vocabulary types, and, therefore, fails as a BCT, in terms of its role in the language as a whole

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[1] These totals refer to independently occurring examples, as far as this can be ascertained, excluding all but one of the duplicates believed to orginate from the same word in the same text. Exceptions occur with compound terms such as *blæhæwen*, in which case one occurrence is counted for *blæwen* and one for *hæwen*. The totals for *blæwen* also include one place-name.

[2] The three definitions of a BCT mentioned here are closely related. Biggam's definition, based on the other two, is specifically tailored for use with historical languages for which there are no native speakers to question.

(Biggam 1997:255).[3] Its apparent basicness in the literate sector of Anglo-Saxon society suggests that it may have developed into an English BCT if it had not faced a challenge from *bleu*.

3. *Anglo-Norman* bleu *(eleventh and twelfth centuries)*

The crucial period for observing the process by which the loanword *bleu* was introduced and became established in English is, unfortunately, a time for which the surviving evidence is minimal. Neither *hæwen* nor *bleu* occur in any English-language texts from the Norman Conquest (1066) until the end of the Old English period, which is generally dated to c.1100. In a Latin-language text, however, the *Domesday Book* of 1086, there occurs a personal name based on Norman French (NF) *bleu*. A certain *Radulfus* (Ralph) *Bloiet* is mentioned as holding, among other estates, Silchester in Hampshire from King William (Munby 1982: section 32.4).

Turning to Early Middle English (EME, usually dated from c.1100 to *c*.1340), the evidence is still sparse. In Anglo-Saxon England, unlike most of Europe, the vernacular language had been a major vehicle of both administration and literature. After the Norman Conquest, however, Latin had become the language of administration and the Church, while Norman French, which is referred to as Anglo-Norman (AN) in its English form, was the language of the new aristocracy and the royal court. This situation must have drastically reduced the number of newly composed writings in English, and, certainly, very few survive from the century and a half after the conquest. As regards the whole Early Middle English period, *hæwen* does not appear at all, but *bleu* does, and, in this section, some of the earliest examples will be considered.[4]

In addition to Radulfus Bloiet, recorded from 1086, another early example of this name, this time appearing in an English-language text, is *Rotbert Bloet*, Bishop of Lincoln, whose death in 1123 is recorded in the *Peterborough*

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[3] Anderson misrepresents my opinion when he says that I believe a Level 1 (basic) semantic slot for BLUE existed in Germanic (Anderson 2003:165). With reference to Old English, I concluded that *hæwen* was a *developing* BCT (Biggam 1997:256), and, indeed, Anderson quotes me as saying that it failed as a BCT (Anderson 2003:164). We are, therefore, agreed on this point. For a study of how to evaluate degrees of basicness, see Kerttula (2002).

[4] I am grateful to Prof. Robert Lewis of the University of Michigan, the last editor of the *Middle English Dictionary* (*MED*), for personally checking the *MED* citation slips for any examples of ME *haue* (OE *hæwen*) additional to the single instance published in the dictionary. There were none. I would also like to thank Paul F. Schaffner, also of the University of Michigan, for his help in dealing very fully with several queries.

Chronicle (Plummer & Earle 1892-1899:I, 251). Although the evidence from personal names shows that at least one *bleu* cognate in French would have been heard in England from the earliest days after the Conquest, it probably had no influence on the adoption of *bleu* into English since names can be used without any understanding of their meaning. The name *Bloiet / Bloet* is a diminutive form of Old French (OF) *bleu* (Godefroy 1881-1902, s.v. *bleuet*).

The immediate source of French lexemes in the Early Middle English period was Anglo-Norman, so it is appropriate to look at some early uses of AN *bleu*.[5] The word appears in Geffrei Gaimar's description of William II (Rufus), written in 1139: *Barbe aveit russe e crine bloie* (Gaimar 1960:198), indicating that the king had a red beard and blonde hair. Although contemporaries and near-contemporaries variously describe the king's hair as red or blonde (Barlow 1983:11-12), they are agreed that he was fair-haired. Ott suggests that *bloi* was particularly used to describe hair colour in Old French (Ott 1899:77), although he regards *bloi* as denoting YELLOW and *bleu* as a separate word denoting BLUE (Ott 1899:77, note 1). More recently, the view has been that, whether or not these meanings derived from different lexical origins, they, along with other meanings, all came to be senses of OF and AN *bleu*. In the context of hair, *bleu* most likely continued to indicate a fair colour, and this may well have been the original sense of the *Bloiet / Bloet* names, as the diminutive suffix *–et* also occurs in the substantival forms of other adjectives denoting animal and human hair colouring, for example OF *blanchet* "cheval blanc" and *brunet(e)* "homme (femme) brun(e)" (Ott 1899:14;65). The hair of Alexander the Great, as depicted in the *Roman d'Alexandre* by Thomas of Kent, is usually considered to be fair as well: *Bloy peil ot e crespe…* (Thomas of Kent 2003:42, line 449; *AND*2, s.v. *bleu* 2: "fair, golden"). The poem is dated to between 1175 and 1185 (Thomas of Kent 2003:vii).

Other early Anglo-Norman citations have a meaning defined as "pale" or "unstained" (*AND*2, s.v. *bleu* 1). In the poem *La vie d'Edouard le Confesseur*, a work of c.1170, when the saint's body is examined years after its interment, the burial cloths are found to be as clean and unstained as on the day of burial (*Tot les trovent e bles e seins*) (Södergård 1948:292, line 6009). They are described as *bles* (plural). Also pale are the disgusting monsters who worship Saturn in the *Roman d'Alexandre*, where they are described as having yellow and pale

[5] I am grateful to Prof. David Trotter of the University of Wales, Aberystwyth, for allowing me access to the *Anglo-Norman Dictionary* (2nd edition) (*AND*2) before it was published in print or online. The first two volumes (A-C and D-E) were published in 2005, and definitions in this paper have been checked against them.

skin (*Le quir ont jaune e bleif*) and sparse hair (Thomas of Kent 2003:468, line 6027).

The only trace of the sense BLUE in either Anglo-Norman or in Middle English in this early period appears in the *AND*2 as an adjective defined as "bluish" (*AND*2, s.v. *bleui*). This occurs in a description of the onyx appearing in what is now called the *Alphabetical Lapidary*, believed to have been written by Philippe de Thaon in the very early years of the twelfth century (Studer & Evans 1924:201-202). There are, of course, fewer texts surviving from this early period than from later centuries, but there is a definite impression that the BLONDE / PALE senses of *bleu* were predominant.

4. *Anglo-Norman and Early Middle English* bleu *(thirteenth century)*

This and later sections present some of the surviving occurrences of *bleu* and its cognates, paying no heed to whether the citations appear in the *Middle English Dictionary* (*MED*), the *Anglo-Norman Dictionary* (*AND*) or the *Dictionary of Medieval Latin from British Sources* (*DMLBS*). The reason for not distinguishing among the three languages is that this more accurately represents the linguistic environment of the educated class of the period. The three languages adopted vocabulary from each other, so that individual words became fashionable, unfashionable, established or abandoned in a veritable mixing-bowl that was stirred for centuries. It would often have been the case that people at the time were unaware of, and unconcerned about, the linguistic origin of particular words (Trotter 1996:25-27). Trotter encourages us to "get away from the notion of rigidly separated and rigorously separable languages …and think in terms of a fluid, complicated and (to us) sometimes downright muddled situation…" (1996:31).

The name *Petrus le Blucler* occurs at the opening of the thirteenth century. He is a royal official mentioned in a writ dated to 1203, and recorded in the Liberate Rolls (copies of Chancery writs authorizing payments from the royal treasure) (Hardy 1844:58; *MED*, s.v. *bleu* adj. 2 (c)). Presumably his second name means "clear blue" or "shining blue" (*AND*2, s.v. *cler* a. 1), and perhaps refers to his eyes or his favourite colour of clothes.

The BLONDE sense continues into the thirteenth century, and an example occurs in *Gui de Warewic*, a poem dated to c.1210. Gui's bride, Felice, is described as a woman of great beauty with *le chef bloi* "blonde hair" (Ewert 1932-33:I, 2, line 59). The BLONDE sense can still be found at the end of the century, since *bloy*(*e*) glosses Latin *flavus* "pale yellow, golden; golden-haired" in copies of Eberhard of Bethune's *Graecismus* (Hunt 1991:II, 32).

The primary sense of *bleu* in the *AND*2, however, is "discoloured, livid, bluish", referring to the abnormal appearance of humans as a result of illness, bruising, or other misfortunes. The earliest example given is from the *Miracles de la Sainte Vierge* of c.1240, describing the face of a very ill man: *E la face si bleve li fu, Cum un platein de plum batu* (Kjellman 1922:245). The man's face is the bluish-grey colour of lead.

An interesting case is the name of a ship mentioned in the Calendar of Wills for ?1278 (Sharpe 1889-1890:I, 32). A certain Edward Grobbe requests that his ship *Blewebolle* be sold after his death in order to maintain a chantry in Barking Abbey. The name appears to mean "blue bowl", which, if so, presumably alludes to a broad-beamed and capacious cargo vessel. It is also possible that the second element derives either from Middle English (ME) *bolle* "a globular seed pod, boll" (*MED*, s.v. *bolle* n. 4 (b)), or from AN *bolle* "ball (?)" (*AND*2, s.v. *bolle*[1] 2), representing an early instance of the plant-name *blueball*, sometimes interpreted as the cornflower (Wijk 1911-1916:I, 276, s.v. *C. cyanus*) (*Centaurea cyanis* L.), and sometimes as the devil's-bit scabious (Wright 1898-1905:I, 311, s.v. *blue* sb. 6) (*Succisa pratensis* Moench). Both plants, roughly speaking, have clusters of small blue or violet flowers in ball-form. Early plant-name identifications are problematic, but it has been suggested that one or both of these same plants may have been designated by the OE plant-name *hæwenhnydele* (Biggam 1997:132-177), in which case the plant-name would show a clear case of the replacement of *hæwen* by *bleu*.

The presence of the word *bleu* in *Blewebolle* raises the matter of the appearance of ships at this date. Writing about galleys, that is, warships built to royal order, Tinniswood quotes details of paint costs in 1295, and finds them very expensive, especially one translated as "foreign blue" which cost six shillings per pound (weight). The cheapest colours were red and white lead, the red costing just three (old) pence per pound (Tinniswood 1949:300-301). If the *Blewebolle* really was a cargo vessel, and really was blue, it is likely that only a small amount of colour was used to merit this name. Alternatively, if the name alluded to a plant, it is not essential to envisage a blue ship at all. Whether blue paint or a blue flower is involved, however, it is unlikely that this use of *bleu* could denote anything other than BLUE, so the ship's name represents one of the earliest examples of the BLUE sense of *bleu*, not referring to cloth (see below), not a personal name, and from a geographically English context.

Two final examples are presented to illustrate *bleu* well-established as a BLUE word in English. Firstly, in the late thirteenth-century poem *Sir Tristrem*, Tristrem is given a dog, and *He was rede, grene & blewe* (Burnley & Wiggins 2003:line 2404). Secondly, in the very late thirteenth- or early fourteenth-

century work, *Cursor Mundi*, the Castle of Love and Grace is described as painted in three colours: green at the foundations, red at the battlements, and the middle section *Es al o bleu men cals Ind* (Morris 1874-1893:II, 570, col. 1, line 9920). In both these citations, *bleu* appears, apparently as an equal, with two basic colour terms, *red* and *grene*. Furthermore, in the latter example, it could be argued that *bleu* functions as a superordinate term for a particular type of blue, 'Indian blue', and, as explained above, this role indicates a well-established, or even basic, colour lexeme. This evidence comes, of course, mainly from the educated class, but the ship's name suggests that *bleu* was already widely used with a BLUE sense.

5. *The fate of Old English* hæwe(n)

The above section shows that, by the late thirteenth century, *bleu* was considered appropriate to denote BLUE in English in varied social and literary contexts. What had happened to OE *hæwe(n)*?

After the Norman Conquest of 1066, there are only a few brief glimpses of this word, some dubious, in English sources. The first occurs, unexpectedly, in an Anglo-Norman text. The word appears twice in the *Ordinationes telariorum*, or "Ordinances of the Weavers" (of London), a text which, in the form in which we have it, was reconfirmed in the year 1299-1300. The document sets out various regulations concerning the production of cloth, and states that *touz … reies, et hawes, et porreies* of a certain length should weigh at least ten pounds (Riley 1859-1862:II, 125). *Hawe* is one of the three types of cloth mentioned here, and Munro explains that this is one of the cheaper, coarser and lighter cloths on the market, since an equivalent length of broadcloth would have generally weighed 64 pounds (Munro 2004:8). The second reference stipulates that *nul noir fil me [*recte *ne] soit mis en drap en lu de hawen…*, "no black thread should be put into cloth in place of *hawen*" (Riley 1859-1862:II, 125). Riley suggests that *hawe(n)* refers to a colour, and presents the possibility that OE *hæwen*, which he translates as "sky-coloured", "may be the basis", although he warns that "in early English" the plural for hawthorn berries was *hawen*. The *AND* (first edition) agrees with Riley's first suggestion, since it records the words as *hawé* and *hawéen* (adjective and noun), and defines them as "sky-blue" and "sky-blue cloth" respectively. Although the colour definition may not be correct, it is highly likely that these two references represent the first surviving appearance of *hæwe / haue* for over three hundred years.

The next appearance of ME *haue* occurs in *The Awntyrs off Arthur*, a romance which was probably composed in Cumbria, and dates, broadly speaking, to the late fourteenth or early fifteenth century (a.1400 (*MED*, s.v.

haue); c.1420 (*Oxford English Dictionary (OED*2*)*, s.v. *haw* a.)). The word occurs in a description of the hood worn by Dame Gaynour (Queen Guenevere): *her hode of a hawe huwe* (Hahn 1995:178, line 18).[6] There is no other example of ME *haue* extant from England, and only one possible context for its survival as NE *haw*. It may be extant as one element of a compound plant-name, *hawdod*, which is recorded only twice, once in Fitzherbert's *Book of Husbandry* of ?1523 (Fitzherbert 1882:30), and again in John Hobson's diary for 1729-1730 (Jackson, Morehouse & Margerison 1877-1886:I, 296). The plant-name is discussed in Biggam (1997:167-169).

In Scotland, ME *haue* survived as Older Scots (OSc.) *haw*, and first appears in the works of the poet Robert Henryson. In his *Testament of Cresseid*, written in the late fifteenth century (a.1500: *Dictionary of the Older Scottish Tongue (DOST)*, s.v. *haw* a.; c.1450: *OED*2, s.v. *haw* a.), he writes of Cynthia (the goddess Diana as the moon) as being *haw as the leid, of colour nathing cleir* (Henryson 1987:119, line 257). This appears to indicate the bluish grey colour of lead, not transparent, shining or vivid (*DOST*: *cler* "materially clear or bright"). *DOST* continues to record examples of *haw* in the Scots literature of later centuries, where it appears in the works of, for example, William Dunbar in the sixteenth century, and Alexander Gardyne in the seventeenth (*DOST*, s.v. *haw* a.). OSc. *haw* is defined by *DOST* as "Of a bluish, leaden, livid, or dull colour". Modern Scots *haw* continued in use into the twentieth century, when, however, it began to falter. The latest citation recorded by the *Scottish National Dictionary* (*SND*), from James Alexander's *Mains and Hilly*, is dated 1929. It is defined by the *SND* as "Of a pale, wan colouring, tinged with blue or green".

Considering that *haue / haw* survives into modern times in Scotland, that *The Awntyrs off Arthur* was probably composed in Cumbria, and that the two citations of *hawdod* hail from Derbyshire (Fitzherbert) and Yorkshire (Hobson), it seems reasonable to assume that, although the word disappeared from the south of England, it maintained a presence in the north of England for some centuries after the Conquest. The plant-name cannot, of course, be taken as evidence for the independent use of *haw* in speech or writing into modern times in England. In Scotland, it was much more active and, if the meaning of OSc. *haw* is a good indication of the word's meaning in late mediaeval northern England, then it appears that the cool macrocolour sense which has been suggested for OE *hæwe*(*n*) in the usage of all but educated Anglo-Saxons (see Section 2), remained virtually unchanged for centuries.

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[6] There is no evidence to support Hahn's interpretation of *hawe* in this context as "a shade of aqua", which implies a combination of blue and green.

6. *The linguistic background to the adoption of Anglo-Norman* bleu

Although the paucity of evidence is a problem, it does appear that *hæwe(n)* went into decline in England as *bleu* became more widely used and increasingly important in the denotation of BLUE. How did this come about? The social context of the initial adoption of *bleu* is no mystery. Educated people in post-Conquest England were likely to be trilingual, knowing Latin, French and English. For those who knew at least two languages well, this would have created the ideal circumstances for code-switching, or moving effortlessly from one language into another and back again (Schendl 2002:51-54). Under these conditions, in both writing and speech, individual lexemes which seem especially apt for denoting a particular object or concept can 'slide into' the second (and third) language in a way which is more unobtrusive than with a deliberate borrowing or coining. If successful, such words soon accommodate to the phonology and form of the target language or languages, and are not perceived as foreign.

While the general linguistic circumstances of post-Conquest England were conducive to lexical adoptions, there is an additional reason why the adoption of *bleu* into English could have been unusually straightforward. This concerns the number of ultimately related words in Latin, English and Norse with which the English were already familiar.

Educated Anglo-Saxons had been using the Latin lexeme *blavus* (various spellings), meaning "blue", since the earliest days of Latin scholarship in England. Æthilwald (late seventh to early eighth century), for example, uses it to describe some fine textiles brought back from Rome (Æthilwald, line 162). The word continued to be used in British Mediaeval Latin (BML) throughout the mediaeval period (*DMLBS*, s.v. *blavus*).

Bleu, of course, did not remain confined to educated circles but became part of the basic vocabulary of English, and there are two words, similar to *bleu* in both form and meaning, which would have been familiar to ordinary English speakers before the arrival of the French word. The first is OE *blæwen* or *blæ(w)* "dark blue", which is very rare in surviving texts, but gives indications that it was associated with textiles and dyes (Biggam 1997:98-99; the *Dictionary of Old English (DOE)* defines this word as "some shade of blue", s.v. *blæ*). The Old English word may have survived in the speech of those involved with related occupations, and / or in the everyday description of cloth and clothing, but there is no evidence for this. Also familiar to ordinary English speakers was an Old Norse (ON) word which emerged in the Middle English records as *blo* (various spellings), meaning "Of the body: dark, discoloured, black-and-blue, livid" (*MED*, s.v. *blo* adj.; *OED*2 s.v. *blae*), and deriving from

ON *blár* "of the colour of lead…; …of the livid colour caused by a blow" (Cleasby & Vigfusson 1957, s.v. *blár*). All this suggests that even monoglot English speakers would have found the form and meaning of *bleu* relatively familiar, even when they heard it for the first time.

7. *The semantics of Anglo-Norman and Early Middle English* bleu

Anglo-Norman *bleu* denoted several concepts, so it is necessary to consider which senses of the word were adopted into English, and which were ignored, as this will suggest the motivation for the adoption. The following senses of AN *bleu* (adjective), taken from the *AND*2, are extant from texts dating up to the end of the thirteenth century (numbered main senses are followed by indented sub-senses):

(1) discoloured, livid, bluish
    blue
    azure (her[aldic])
    blue-grey
    ashen, grey
    pale, unstained

(2) fair, golden
    tawny

(3) dark
    stern, gloomy

It can be seen from the above that, for AN *bleu*, the meaning "blue" was merely a sub-sense of one of the three primary senses. Turning to the *MED*, the following senses are listed for ME *bleu* (adjective) in texts dating up to the end of the thirteenth century:

(1) (a) Blue; esp[ecially], sky-blue, azure
(3) Dark-skinned, ?bluish black

It can be seen from the above that the adjective *bleu* carried over into English very few of its Anglo-Norman senses. Although the senses of BLUE-GREY and DISCOLOURED are evidenced for ME *bleu* at least a century later (*MED*, s.v. *bleu* adj. 4), it is unclear whether this results from popular confusion with ME

blo. From this evidence, it would appear that the sense BLUE was the principal attraction for adopting *bleu* into English, although the scarcity of texts in English must always be borne in mind.

8. ***Considerations regarding dates***

It has been shown above that most of the earliest surviving uses of AN *bleu* in England appear to mean "fair, golden" or "pale, unstained", and that *bleui* "bluish", dating from the early years of the twelfth century, is the only hint of blue in AN *bleu* and related words before the opening of the next century (see Section 3). In the thirteenth century, on the evidence of the entries in the *AND*2, the most usual senses of the adjective *bleu* and other cognate parts of speech appear to be "discoloured, livid, bluish", and "blue", followed by "fair, golden" and "blue-grey". In the later part of the century, other indubitably blue-coloured senses first occur, such as "hyacinth, a blue flower" and "azure (heraldic)".

ME *bleu* "blue" emerges in the late thirteenth century (see Section 4), and this is no surprise since Coleman has shown that this is the period exhibiting the highest relative rate of borrowing from French (Coleman 1995:107). It would appear, therefore, that AN *bleu* was adopted into English at a time when its "blue" sense had gained a certain degree of prominence over its "fair, golden" sense.

From later centuries come three types of evidence showing further stages in the naturalization of *bleu* into English. Such evidence suggests that the word was ceasing to be the exclusive preserve of bi- and trilinguals. The first evidence comes from the record of a legal case brought before the Commission of Oyer and Terminer in 1310. A complaint from the Abbot of St Mary's, York involves a list of names which includes a certain *William Bluhod* (Public Record Office 1894-1904:I, 252). William's surname or nickname, meaning "blue hood", shows that *bleu* could be used by this date, to create compound terms with English elements.

The second type of evidence involves affixation. By 1398, *bleu* had begun to form morphological variants like a native English word, the earliest example being *bluish* (*OED*2, s.v. *bluish*). Thirdly, it is also around this time that there is an expansion of the senses of ME *bleu* (both adjective and noun), since "sad, sorrowful" is first instanced in c.1385; "as a symbol of stability and constancy" appears a.1420; and "blue enamel" in 1420 (*MED*, s.v. *bleu* adj. 1 (e); *bleu* n. 1 (b); 3 (b)). It is beyond the scope of this paper to test ME *bleu* for basicness, but it would appear that, should this be done in future, it may prove fruitful to investigate the early fifteenth century evidence.

9. *Cloth and the significance of* **bleu** *(noun) and* **bluet**

The questions how? and when? have now been addressed, but there remains the most curious question of all: why? If Latin, English and Norse words, similar in form and meaning to *bleu*, were already known in England, why was yet another word adopted from French? It is suggested in this section that the reason may be found in the semantic field of cloth and clothing.

The use of *bleu* as a noun meaning "blue cloth" is first recorded from 1205, where it occurs in a letter in the Close Rolls (copies of royal letters sealed with the Great Seal). King John orders that several high quality fabrics, clothes and furs be supplied to him, and the list includes *i. sup[er]tunica[m] de blou* "one surcoat of blue (cloth)" (Hardy 1833-1844:I, 25). The word *blou* occurs here in a Latin text but, apparently, in a vernacular form.[7] There are two similar examples in the Curia Regis Rolls (accounts of cases brought before the courts of law), both dated to 1220. In the first case, a certain *pallium de blu* "a cloak of blue (cloth)" was stolen from a house, and in the second case, a man is described as wearing *una capa de blu* "a cape of blue (cloth)" (Crook 1922-:VIII,270;389).

A similar tale emerges for the noun *bluet* "blue cloth". The first example occurs in the Latin text of the Curia Regis Rolls for 1203, when a certain Hugo of Witingham was accused of stealing *i. capam de bluet* (Crook 1922-:II,180). The word *bluet* in this example lacks a Latin case-ending, and, therefore, appears to be a vernacular word. This suggests that the related Latin forms which occur elsewhere represent naturalizations of French words in Latin. The *DMLBS* shows that the sense "blue cloth" is recorded for the following Latin words: *blavus* and *bluettus* from 1207, *bludus* from 1237, and *blodius* from 1316. While *blavus* is a substantival version of the adjective *blavus*, which had been in use for centuries, the other words are most likely to have been adopted and adapted more recently from French.

Evidence for adoption of *bleu* and *bluet* into English is much later. The earliest recorded sense of "blue cloth" for ME *bleu*, in an English text, dates to c.1390 (*MED*, s.v. *bleu* n. 3(a)), and the first example of *bluet* in the *OED*2, in an English text, is as late as 1866. This almost certainly reflects, however, the rarity of administrative records in the English language in the period of bluet's

[7] Some examples of *bleu* in Latin texts occur in the *MED*, but not in the *OED*. I am grateful to Anthony Esposito of the *OED* for discussing them with me, and explaining the policy of that dictionary.

popularity. Given the trilingual educated class of this period, it is highly unlikely that two French words considered essential for use in Latin were not also used in English. It would appear, therefore, that bluet was a cloth known to French speakers, and which had some particular characteristic which made their words for it seem more appropriate than existing Latin or English words with similar meanings. What is known about this cloth? The *MED* is cautious and interprets *bluet* as "a kind of blue woolen cloth", while *bleu* is simply "blue cloth" (*MED*, s.v. *bluet; bleu* n. 3(a)).

As a first step, it is assumed here that *bleu* (the noun) and *bluet* both refer to the same cloth. This is because some versions of the medical text, the *Novele cirurgerie*, use *bleu*, and others use *bluet* in the same position in the text (Hieatt & Jones 1990:32, line 30; Hunt 1987:281, line 80). Modern English *bluet* will be used henceforth for this cloth.

The first observation about bluet is that it appears to refer to both high and low quality cloth. An example of the former is the citation from the Close Rolls, mentioned above, which refers to a garment ordered for the King, and which is listed in company with other fabrics and furs of the highest quality. In addition, in a law case of c.1300, a man claimed payment for ten ells of bluet (*.x. aunes de blue*) costing forty shillings in silver (Shanks 1963:110), and this amounts to nearly £667 in 2002 prices (Officer 2004). Another example is the *pannus* of bluet (a roll of, probably, 24 yards in length) bought for the knights who attended Roger Bigod, Earl of Norfolk, in 1284, and which cost £5.14s.9d (Rogers 1866-1902:I, 575-576), representing over £1,757 in 2002 prices (Officer 2004).

In view of these impressive cases, it is surprising that *un drap bluete* "a bluet cloth" is recommended, probably as a bandage, for dressing an abscess or other septic swelling in the mid thirteenth-century medical text, *Novele cirurgerie* (Hieatt & Jones 1990:32, line 30).[8] Further evidence of cheap bluets is given by Rogers, who brackets them with russets and blankets as the cheapest woollens of all. He quotes the case of fabric bought for boys at Merton College in 1340, which cost just over 6½d. He says of bluet, "Eight entries before the Plague give an average of nearly 1s.7½d. the yard, and in general it may be considered to represent an inferior or second quality of cloth" (Rogers 1866-1902:I, 576).

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[8] The *drap bluete* is reminiscent of the *hæwene claþ* in pre-Conquest medical texts (e.g. Cockayne 1864-66:II, 24; 338; 344). The blue dyes woad and indigo (which are chemically identical) were known in various cultures for their antiseptic qualities (Balfour-Paul 1998:218-9).

It is clear from the examples mentioned above that, whatever characteristic of cloth the words *bleu* and *bluet* encompassed, it was a feature of the entire price range. The fact that both words have a clear connection with the colour blue leads to the suggestion that bluets could be of any price, provenance, quality, size, or any other feature, but they all had colour in common. This may sound obvious, but it has some interesting implications.

It is safe to assume that bluets were woad-dyed woollens, and it should be understood that a single vat of woad dye could produce a huge range of blues. A very dark blue could be obtained by immersing the cloth several times in a newly prepared vat, and successively paler shades would result from the use of less concentrated dye, a nearly exhausted vat, or a vat which had been allowed to cool. The palest blue of all would result from a brief immersion in such a vat (Hurry 1930:33). Because the darkest shades required the most dye, and multiple immersions, they were obviously more expensive. The most costly blue cloth of all was *perse*, which regulations stated had to be dyed by woad alone, and on white wool only (Carus-Wilson 1944:35). The price of perse nearly reached that of scarlet dyed in grain, a most luxurious cloth, but paler blues were the cheapest of all the coloured cloths (Carus-Wilson 1987:634). This considerable price-range for blue cloth clearly echoes the evidence for bluets from the English records.

Cardon has investigated the guild regulations of the Catalan and Mallorcan medieval dyers, and explains that every piece of woad-dyed cloth was immediately checked against an official scale of blues, ranging from dark to pale. Unfortunately for the colour semanticist, Cardon tells us that it is rare to find colour-names on such official scales, as they were labelled with prices, which gradually reduced towards the pale end of the scale (Cardon 1992:28). The shades of blue are, however, named in some Italian documents of the fifteenth century, and, in a Florentine source of 1419, *persi* are still the darkest and most expensive cloths, with *monachini* being a little paler, and *azurrini* a little paler again, but still considered to be dark cloths. Below these come four names, with subdivisions, of pale blues (Cardon 1992:28).

The more usual lack of colour names against each shade of blue on the official scales suggests that, to indicate a particular shade, it would be customary, at least among specialists such as dyers and cloth merchants, to state the colour of the scale, followed by the price (rather than the shade). It is suggested, therefore, that *bleu* and *bluet* were used in French to denote the blue scale of woad-dyed woollen cloth, and that this semi-technical usage was the initial reason for their adoption into Latin and, probably, into English. It can be seen from Section 7 above that AN *bleu* (the adjective) covered a variety of

blues, including grey-blue, bluish, dark, and heraldic azure, and such versatility may have resulted from, or been responsible for, its connection with the blue scale for woad-dyed cloth. More importantly, this gave *bleu* a clear superordinate status for the 'blues', and this is already evident in Latin in the year 1313-1314. In the household accounts of Thomas of Lancaster, reference is made to the purchase of *.lxx. pannis de blueto asureo pro militibus*, "seventy cloths of 'azure' bluet for the soldiers" (Baldwin 1927:198). It is clear that *azureus* in this phrase is a hyponym of *bluettus*, and this hierarchy, with *bluettus* as superordinate, would have been easily extended from cloth to colour, especially since AN *bleu* denoted a cloth as a noun, and, most often, a colour as an adjective.

10. *The* hæwen / bleu *'contest'*

At the end of the first millennium, Old English, Norman French and British Mediaeval Latin were all alike in that they had no basic term for BLUE. Some of their blue words indicated a particular type of blue, such as BML *aerius* "sky-blue", and others were contextually restricted, such as OE *wæden* "blue (of dyes, textiles)", literally "woaded". At this date, there appears to have been no motivation to create a superordinate term for BLUE, but it is suggested that such a motivation arose in later years with the industrialization (in mediaeval terms) of the woad-dyeing industry, involving guild regulations, pricing standards, and attempts at quality control.[9] It is further suggested that the French colour term *bleu* was used of the products of the woad-dyeing industry, regardless of specific type of blue, and thus gained a superordinate status which spread beyond its industrial and commercial use.

Old English *hæwen*, it has been argued, was a superordinate term for BLUE only amongst the literate. For most of the English speaking population, its meaning was probably a macrocolour sense of "grey or dull blue or dull green", a conclusion based on the apparent sub-senses retrieved from surviving records (Biggam 1997:128). This suggestion fits well with the meaning of ME *haue* "bluish or gray", and even the much later Sc. *haw* "Of a bluish, leaden, livid, or dull colour". This range would not encourage the use of *haue* to describe the bluets, as it is insufficiently versatile, but it does explain why *hawé* appears in Anglo-Norman to designate, presumably, a particular shade of blue only, probably greyish blue.

It is mere speculation, but it seems likely that, during the late eleventh and

[9] In England, the assize of cloth, which set out regulations for the measurements of cloth, was first promulgated in 1169 (Bridbury 1982:106-11).

twelfth centuries, when so few records survive in English, *hæwen* continued to be used in speech. With the increasing organization of the woad-dyeing industry and cloth-trading regulations, however, from the very late twelfth century to the early thirteenth century, those involved in industry, commerce, and record-keeping, as well as the purchasers of cloth, came to refer to woad-dyed cloth of all shades as 'blues' and 'bluets', using originally French terms, in all three languages of England. Increasingly, they would also have used *bleu* as a superordinate term for all blues in any context, and it is clear that the word was naturalized in 'educated' English by, at least, the very late thirteenth century.

Literate Anglo-Saxons, who had used *hæwen* as a superordinate term for BLUE, may have been few in number, and they may only have used it in this way in the context of translation from Latin. After the Norman Conquest, those who continued to write would have increasingly used Latin or French, and may well have forgotten the more specialized senses of English words. There remained, therefore, the popular macrocolour sense of *hæwen*, but this was clearly overwhelmed in the south by the popularity of the adopted *bleu*.

11. *The Middle English blue category*

Although ME *bleu* may not have become a basic colour term until the early fifteenth century at the earliest, it now looks evident that *hæwen* was no real competitor. The main reason for this is that, after 1066, educated English people no longer had to wrestle with the translation of Latin vocabulary into English, which was the arena in which *hæwen* had been evolving. It has been estimated that only about seven percent of *basic* Modern English vocabulary is of French origin (Thomason & Kaufman 1988:329), and *bleu* was destined to be included in that group.

If the basic term for the Middle English blue category is anomalous, the rest of its vocabulary is also unusual. Based on the data in the Historical Thesaurus of English, lists of Middle English simplex adjectives for most of the colour categories have been compiled.[10] The totals for each category are too low to be statistically significant, but they give an overall impression of a fairly equal mixture of English and French words. To give some examples, the black category has three English and two French terms, yellow has six English and seven French, and both grey and brown have five English and six French. More unequal in their distribution are white, with seven English and only one French

[10] The HTE is a project in progress in the University of Glasgow, see http://www.arts.gla.ac.uk/SESLL/EngLang/thesaur/homepage.htm

term, and red with four English and nine French. All the superordinate terms for these categories, whether basic or not, are English.

The blue category is unlike any other. Apart from having a basic colour term adopted from French, its vocabulary is overwhelmingly French in origin. *Haue* is the only English term, and even that was disappearing in the south, but it has seven non-basic terms adopted from French: *asur, bleu, inde, pers, plunket, violet* and *wachet*. Three other non-basic terms were adopted from Latin: *glauk, saphirine* and *venet*, thus creating a colour category with no English vocabulary at all in the south of England after the demise of *haue*. The Middle English blue category is by far the least English of any of the colour categories.

12. *Conclusion*

The question asked at the beginning of this paper was why the basic colour term for the Middle and Modern English BLUE category is not of English origin, and the title of this paper implies that a political event, referring to the Norman Conquest, resulted in a disturbance in the colour vocabulary of English. It did, of course, result in a disturbance to many other aspects of English, but the gradual accumulation of colour vocabulary and development of basic terms over centuries makes colour a particularly suitable semantic field for demonstrating anomalies. While statistics of Middle English vocabulary adopted from Anglo-Norman reveal the breadth of that language's impact on English, the abrupt change of direction and replacement of vocabulary in one category of the English colour system reveals its depth and power at the period of its greatest influence.

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COLOURS OF THE LANDSCAPE
OLD ENGLISH COLOUR TERMS IN PLACE-NAMES

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1. *Introduction*

The purpose of this paper is to explore the contribution made by the place-name corpus to our knowledge of Old English colour vocabulary. This is an area which has received little attention in previous scholarship. The majority of studies have tended to focus on colour terms in Old English literature, particularly poetry,[1] or on certain types of documentary material, such as the boundary clauses of Anglo-Saxon charters.[2] The place-name corpus, by contrast, has been largely ignored in discussions of colour semantics. The only serious attempts of which I am aware to examine the onomastic material alongside other forms of evidence are in Biggam (1997, 1998), each of which deals in exemplary detail with a single area of the colour range. Place-names differ from both documentary and literary sources in that they originate in the spoken language, often being coined centuries before they were written down, by local people who were closely involved in settling or working the land. This means that they preserve unique evidence for the colloquial register of vocabulary, and for forms of language which may pre-date those recorded elsewhere. Unfortunately the material is difficult to access, and this may account for the relative neglect of this range of evidence hitherto. In preparation for this paper, I have attempted to compile a provisional corpus of place-names containing Old English colour adjectives to form a basis for discussion. Before

[1] A useful literature review appears in Biggam (1997:40–78).

[2] Charter bounds have much in common with place-names in that they describe landscape features, and indeed some boundary marks have survived as present-day place-names. A discussion and analysis appears in Kitson (1993). See especially Table 8, giving figures for colour-words at least ten times attested in extant Old English, in General Prose, Leechdoms, Charters, Glosses and Poetry.

moving on to the colour terms themselves, however, it may be appropriate to begin with a brief introduction to place-name formation.

2. *Place-name structures*

The majority of English place-names, and many of those in the border counties of what is now southern Scotland, were coined during the Anglo-Saxon period (c.450-c.1100 AD) and derive from Old English (OE) or – in areas of Scandinavian settlement – Old Norse (ON). All contain what is known as a generic or defining element: a term identifying the type of habitation or setting originally designated by the name. Examples include OE *beorg* "rounded hill", giving the place-name Berrow in Somerset, OE *ford* "ford", giving the place-name Ford in Shropshire, OE *lēah* "wood, clearing", giving the place-name Leigh in Dorset and Gloucestershire, and OE *wīc* "specialized farm", giving the place-name Wick in Worcestershire.[3] Most place-names, however, are compound, combining the generic with an additional term known as the specific or qualifying element. This gives more information about the particular habitation or setting, such as who owned it, as with Chedburgh in Suffolk "Cedda's hill", its indigenous flora or fauna, as with Rudford in Gloucestershire "reed ford", its size or shape, as with Langley in Derbyshire "long clearing", its purpose or product, as with Fishwick in Berwickshire and Lancashire "farm where fish were cured or sold", and so on. Whereas generics generally comprise a word for a habitation or landscape feature, specifics cover a much wider range of vocabulary, including personal names, animal and plant names, agricultural and industrial terms, religious, social and cultural references, and descriptive adjectives. Colour terms comprise a small but important group, forming place-names such as Blackborough in Devon "black hill", Radford in Nottinghamshire and Warwickshire "red ford" and Whitleigh in Devon "white clearing".

As is evident from these examples, place-names from the same origins may develop different modern forms. Conversely, place-names with the same modern form may have different origins. Wick in Caithness derives not from OE *wīc* "specialized farm" but from ON *vík* "bay". A fundamental principle of place-name study is that reliable etymologies can only be established from early spellings, often combined with information from local history and topography. Even so, there are many instances of ambiguity, where the evidence appears equally consistent with more than one interpretation. This applies particularly to

[3] All references are to the historical counties preceding the local government re-organisation of the 1970s.

colour terms, in part because some have given rise to identical-looking personal names. As in other Germanic languages, Old English personal names were based on vocabulary words, and it is not always possible to distinguish between, say, the adjective *hwīt* "white" and the personal names *Hwīta* (masculine) or *Hwīte* (feminine). Since the oblique inflection of a weak adjective in Old English is the same as the genitive singular inflection of an *-an* declension personal name, even the survival of early spellings is not always conclusive for an interpretation of a place-name such as Whitwick in Leicestershire (*Witewic* 1086) as either "white farm" or "Hwīta's farm".

3. *Compiling the corpus*

A county-by-county analysis of the place-names of England has been in progress since the 1920s under the auspices of the English Place-Name Society, and has so far produced 80 annual volumes, most of them dealing with the names of a single geographical area. Known collectively as the English Place-Name Survey, these volumes have brought to light many additions to the known vocabulary of Old English, as well as new meanings and ante-datings for words already on record. The lexical material is catalogued by Smith (1956) in volumes 25 and 26 of the EPNS series. Supplemented by Analyses of Elements in later volumes of the Survey, and currently in the process of revision at the Institute for Name-Studies at the University of Nottingham (Parsons et al. 1997–), this is the main dictionary of English place-name terminology, and formed the starting-point for the corpus of Old English colour terms in place-names presented in Appendix A.[4] Other sources consulted are listed in the *References*. Under each colour term, the place-names containing it are grouped in alphabetical order of generic element, so as to illustrate the range of landscape or habitative features which it was considered suitable to describe. The first entry for OE *blæc*, for instance, shows that it was used of hills (OE *beorg* and OE *dūn*), of streams (OE *burna* and OE *wella*, both of which give rise to 'doublets' where the same combination of elements is found in more than one place-name), and in isolated instances of a nook of land and an animal enclosure (OE *halh* and OE *penn*). OE **blāw* "blue" is attested only in the place-name Blofield in Norfolk, where it qualifies the generic OE *feld* "open country", while OE **blēo* "coloured, variegated" qualifies OE *burh* "fortified place" in the Berkshire place-name Blewbury and OE *dūn* "hill" in the

[4] This should be regarded as a provisional corpus pending completion of the English Place-Name Survey and of ongoing work on the place-names of Scotland. I should be very grateful to be notified of any errors or omissions.

Somerset place-name Bleadon. County abbreviations are those in standard use by place-name scholars, with an asterisk indicating terms not on independent record, and italics used for early spellings and for 'lost' place-names (i.e. those no longer in use).

Appendix B presents the same information in a different way, grouping together the place-names from each generic element so that we can see the colour terms associated with individual features. This shows for instance that a rounded hill (OE *beorg*) could be described as black, yellowish, green, or variegated, that a cliff (OE *clif*) could be white or red, that valleys (OE *dæl* and OE *denu*) were always green or grey, and that the only colour adjective applied to churches (OE *cirice*) was OE *hwīt* "white". Where a term has more than one meaning, as with OE *hwīt*, which can also refer to dairy produce, both alternatives have been included. In relation to a church, the reference is almost certainly to the stone used as building material, or its covering. This also applies to Whithorn in Wigtownshire from OE *ærn* "building", where according to Bede the 'white building' was a stone church built by St Ninian (Colgrave & Mynors 1969:222–223). The combination with OE *wīc* "specialized farm", on the other hand, is more ambiguous, so another possible interpretation of Whitwick is "dairy farm".

The translations of Old English terms are intended as a rough guide only, often simply identifying the modern reflex rather than attempting a precise definition which in many instances would not correspond to a single colour term in Present-Day English. Under *brūn*, for instance, the editors of the Toronto *Dictionary of Old English* (Amos & Healey, 1986–; *DOE* 2003) note that "Latin lemmata indicate a colour range: brown, black, purple, red, dun"; while they define *fealu* as:

> a colour-term of varied meaning; the corpus yields the most evidence for a colour basically yellow but variously tinted with shades of red, brown or grey, often pale but always unsaturated, i.e. not vivid; hence, 'tawny', 'yellow(ed)', 'yellowish-red', 'yellowish-brown', 'yellowish-grey' all appear as translations; the ModE reflex, 'fallow', is now obsolete except of the coat of an animal.

In some instances, the place-name evidence can help to refine and to extend the definition of individual terms. Compounds of OE *hwīt* "white" with terms for water, as in Whitford in Devon and Whitwell in several English counties, suggest that it could also mean "clear", while the frequency with which it combines with OE *cirice* "church" and other terms for buildings, as in Whithorn in Wigtownshire, Whitby in Cheshire, and the common place-name Whitchurch, suggests a particular association with stone buildings. OE *rēad* "red" – a term which of course had a much wider range than PDE *red*,

including the ‘pink’ and ‘orange’ areas of the colour range – again combines with terms for water, although here there is potential for confusion with OE *hrēod* “reed”. It is also characteristically applied to rocks, soil and foliage, none of which would ordinarily be described as ‘red’ today. The Toronto *Dictionary of Old English* has so far only reached letter *F*, and one of the aims of the present paper is to provide material which can be taken into consideration in the drafting of entries for colour terms in the latter part of the alphabet.

4. ***Dating issues***

The dating of place-names is notoriously problematic. Because many Anglo-Saxon place-names are on record only from the Middle or Early Modern English periods, it is difficult to differentiate them from later coinages, and there is a much-criticized convention among place-name scholars of identifying Old English etyma for names at least equally likely to post-date the Anglo-Saxon period. The corpus presented here includes only those actually on record by about 1100, the vast majority being recorded in Domesday Book. This has the effect of excluding a number of names which may quite probably date from Anglo-Saxon times, but it is the only way of ensuring that we are looking at Old English colour terms rather than their Middle English reflexes. I hesitated for some time over the issue of an appropriate cut-off date, but became convinced that 1100 was the right choice when I saw the effect that it had on the size of the corpus. The initial list which I drew up from Smith (1956) comprised 26 colour terms, and several times the number of place-name citations represented in the appendices, while later volumes of the English Place-Name Survey contributed lengthy lists of additional citations for individual colour adjectives. Once I began checking dates and eliminating place-names recorded after about 1100, I found that not only did the number of citations reduce exponentially, but some of the colour terms themselves disappeared. OE *rudig* “ruddy, red” was there on the strength of a single occurrence dating from 1756. This was Roddimore in Buckinghamshire, where the county editors explain that “the reference is to the colour of the soil. There are numerous gravel-pits in the neighbourhood” (EPNS 2:69). The place-name could be Anglo-Saxon, but there is no evidence that it is, and indeed the Buckinghamshire Survey gives the Middle English reflex *rody* as an alternative derivation. The only other occurrence of the term that I have been able to trace in either English or Scottish toponyms is a Cheshire field-name recorded in 1244–5 as *Reddefeld* and in 1250 as *Rudifeld* (EPNS 47:159). Although of interest in showing an alternation between ‘red’ and ‘ruddy’, this too may or may not go back to Old English.

Other colour terms whose toponymic use proved to be evidenced only from the Middle English period were OE *blāc* "pale, white", OE *dunn* "dun, dull brown", OE *blōd* and *blōdig* "blood red", OE *gylden* "golden-coloured" and OE *sweart* "black". This is not of course to say that the terms themselves are not attested in Old English; simply that they do not appear within the corpus of place-names with which this paper is concerned. This may have a significant effect on the interpretation of the evidence. A transferred sense of OE *blōd* "blood" to mean "blood red" has been adduced on the sole evidence of the place-name Bladbean in Kent "blood tree". This is fully plausible in the context of other place-names referring to red foliage, as with Rattery in Devon from OE *rēad* "red". However, Bladbean is not recorded until 1226 (Wallenberg 1934:431), so although it still pre-dates the earliest occurrence of an adjectival sense of *blōd* to mean "blood-coloured" recorded in the *Middle English Dictionary* from c.1300 (Kurath & Kuhn 1952–2001, s.v. *blōd* adj), it cannot be regarded as secure evidence of an Anglo-Saxon usage.

5. *Some provisional conclusions*

The terms that remain within this slimmed-down list represent a minimal corpus of those colour adjectives known to have been used by the Anglo-Saxons in coining place-names. One point to note is that this corpus is far less extensive than the four pages of closely differentiated colour terms identified by the authors of *A Thesaurus of Old English* at section 03.01.14 (Roberts et al. 1995 I: 144–147). It mostly comprises primary colours rather than the compound formations such as OE *gærsgrēne* "green as grass", OE *nǽdderfāh* "speckled like a snake" and OE *sinderhǽwe* "ash grey" which form a high proportion of the terms cited in the *Thesaurus* from literary sources. Clearly therefore there was a substantial difference between the colour vocabulary used in literary Old English and that used in everyday conversation. Nonetheless, there are three colour terms within the toponymic corpus which are not represented within the extant literature, and four others for which place-names preserve a range of meaning unattested elsewhere. OE *blāw* is recorded only as a noun meaning "(blue) pigment", but an adjectival use is attested in the place-name Blofield in Norfolk. The toponymic and other evidence has been thoroughly discussed by Biggam (1997:95–100), who makes a strong case for a connection with woad and the dyeing industry. I have little to add to this, except to draw attention to two points which support the hypothesis. The first is work by John Field (1998) on later field-names, where he independently suggests an association with the woad industry for the specifics *Blue* and *Black*. The second

is the present corpus, which shows that references to the colour blue are quite anomalous in terms of descriptions of landscape features. The main colours represented are black, brown, green, grey, red, yellow, white and variegated. Other terms for the blue part of the spectrum are striking by their absence, and this appears to corroborate the view that OE **blāw* in Blofield is used in a technical sense, referring to the industrial cultivation of woad.

Something similar may apply to OE *tēafor* "red lead, vermilion". Again, this is something of an outsider, representing a specialized term rather than one of the primary colours which overwhelmingly predominate in the corpus. Alternative explanations of Taverham in Norfolk are that it may refer either to a red-painted building or to soil colour (Mills 2003:453), while the editor of the English Place-Name Survey for Cheshire suggests that Tiverton "may denote a red-painted building, or more likely a place where red-lead was available" (EPNS 46:320). Since there are only two occurrences of the term in place-names, it seems reasonable to assume that both have the same application. This effectively rules out a reference to soil colour, which is possible with OE *hamm* "enclosure", one of two possibilities for the second element of Taverham, but unlikely either with OE *hām* "homestead, estate", the other possibility for Taverham, or with OE *tūn* "farmstead, estate", the second element of Tiverton. A red-painted building is possible, but it seems an unlikely coincidence that the only two instances are each named from the rare term *tēafor* rather than the much commoner *rēad*.[5] Moreover, to paint an entire building red would be very expensive even in a district with local supplies of red lead.[6] I would therefore suggest that the balance of evidence favours a literal association with red lead as an industrial product.

Because place-names refer to features often still visible today, field-work can provide important additional information on the meaning of individual terms. Like OE *blāw*, OE **blēo* is uniquely evidenced as a colour adjective in place-names. Again, however, a substantive use is on record meaning "appearance, colour", and there are also occurrences in compounds such as *blēo-bord* "gaming board" and *blēo-stǽning* "coloured stonework", suggesting that the reference may be to a patterned effect. This is strongly supported by the topographical evidence. OE **blēo* is the first element of the place-names

[5] As the present corpus shows, OE *rēad* combines exclusively with topographical, rather than habitative, place-name elements.

[6] I owe this point to Dr Carole Biggam, who also notes an alternative possibility that small features only such as door-surrounds and / or window-surrounds may have been painted, and draws attention to the modern dialectal use of *tiver* to refer to the much cheaper red ochre.

Blewbury in Berkshire and Bleadon in Somerset, both of which have a chalk or limestone surface creating a variegated appearance. As Parsons et al. (1997:114) note:

> the hillside of Bleadon So is said to have "green parts interchanging with white, where the limestone comes to the surface"...while the soil at Blewbury is "creamy-white chalk", which would give a variegated appearance when under cultivation...

In this instance, then, the place-name evidence not only testifies to the use of OE **blēo* as a colour adjective, but is crucial in establishing its meaning.

Many colour terms originate as the name of an object or substance. Three possibilities within my original list were OE *gold* "gold", OE *rust* "rust" and OE *sōt* "soot", potentially used in place-names with the senses "gold-coloured", "rust-coloured" and "soot-coloured". OE *gold* was quickly eliminated, since as Smith (1956 I:205) points out, most place-name occurrences are either late or difficult to differentiate from the plant-name OE *golde* "marigold". OE *sōt* occurs in a single place-name, Soothill in the West Riding of Yorkshire,[7] where Smith (1956 II:134) suggests that the usage is "possibly in allusion to charcoal burning or the like or to the colour of the soil". However, the entry for Soothill in the subsequent West Riding volumes of the English Place-Name Survey (edited by Smith himself) notes that "There are collieries along this hillside and doubtless the allusion was to coal-dust and soot from coal-burning" (EPNS 31:193). This disposes of the possibility of a transferred use of the term in relation to soil colour, and hence I was also able to delete OE *sōt* from the corpus. OE *rust*, on the other hand, proved to be a successful contender. This is the first element of Rusthall in Kent and possibly also Rushall in Wiltshire.[8] The first element of Rushall may alternatively be a personal name, but the etymology of Rusthall is securely established by early spellings. Here the allusion is to the brownish-yellow colour of its mineral springs (Wallenberg 1931:76–77), presenting firm evidence for a transferred use of OE *rust* "rust" to mean "rust-coloured".

In other instances, the semantic development is in the other direction, with terms recorded as colour adjectives in literary sources being used as substantives in place-names. The only colour terms to be used as uncompounded place-names are OE *brūn* in Brown in Somerset and OE *seolfor* in Monksilver in the same county, with a later affix referring to possession by

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[7] Erroneously attributed by Smith to the East Riding.

[8] Despite the similarity of the modern spellings, the generic of Rusthall is OE *wella* "spring, stream", while the generic of Rushall is OE *halh* "nook of land".

the monks of Goldcliff Priory. Brown was originally a hill-name "the brown one" – it also forms the first element of the name Brendon Hills – while Monksilver is thought likely to derive from an old river-name "the silver one", referring to a clear or bright stream. A possible parallel to Brown is Horn Down in Berkshire from OE *hār*, where the first element is thought likely to have originated as a hill-name "the grey one". Also used as a place-name generic is OE *grēne* in Mangreen, Norfolk, reflecting a transferred substantive use to mean "green place, grassy spot" which is unattested in literary sources until the thirteenth century.[9] Other colour terms have transferred uses as animal names, some of which are only or mainly attested in place-names, as with OE **brūn* "(brown) pig", OE **grǣg* "(grey) wolf", and possibly OE **fealu* "(fallow) deer".[10] The evidence for this is partly morphological – Old English was a highly inflected language, with distinctive endings for nouns and adjectives in different cases – and partly contextual, as a comparison of the different generics found in combination with an individual specific can help to identify its frame of reference. Much work has been done in this area in recent years, and the relevant studies are cited in the *References*. Here, although contextual evidence or grammatical constructions sometimes point to one interpretation rather than another for individual place-names, there remain many instances of genuine ambiguity, and I have therefore not attempted to differentiate between different usages within the corpus. As regards OE *grǣg*, for instance, the combination with OE *sol* "wallowing place" in the Berkshire place-name Grazeley, together with a lack of adjectival inflection in the early spellings, is fairly conclusive for an animal name, while the combination with OE *trēow* "tree" in Greytree Hundred, Herefordshire, seems more likely to represent the colour adjective. Either is possible in the lost Domesday manor of *Greherst* in Derbyshire, explained as "grey copse" in the Derbyshire volumes of the English Place-Name Survey (EPNS 28:260); and Milnegraden in Berwickshire is similarly ambiguous, although Williamson (1942:103) and Biggam (1998:78-79) favour an animal name.[11]

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[9] Kurath & Kuhn (1952–2001) note uses in place-names and surnames from the final decade of the twelfth century.

[10] There is one uncertain literary occurrence of OE **brūn* "(brown) pig" within an Old English riddle.

[11] Milne is a late affix added in the nineteenth century.

6. *The way ahead*

In conclusion, it should be emphasized that this range of evidence offers considerable potential for future research. Within the scope of this paper, it has only been possible to outline some of the main issues and to illustrate some of the ways in which place-names can be used to further the study of colour vocabulary. Much more remains to be done. Indeed, whereas this paper has focused exclusively on the Old English evidence, the place-name corpus also offers a great deal of material for the study of colour terminology in later stages of English, and in the other Germanic and Celtic languages which make up the rich and varied toponymicon of Britain.

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EPNS *see* English Place-Name Survey.

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Appendix A

Old English colour terms in place-names recorded by c.1100

blæc ‘black’
- beorg ‘rounded hill’ Blackborough D
- burna ‘stream’ Blackbourn Sf, Blackburn La
- dūn ‘hill’ Blagdon So
- halh ‘nook of land’ Blakenhall Ch
- penn ‘enclosure (for animals)’ Black Pan Wt
- wella ‘spring, stream’ Blackwell Db, Wo

blāw ‘(blue) pigment’, *blāw ‘blue’
- feld ‘open country’ Blofield Nf

blēo ‘appearance, colour’, *blēo ‘coloured, variegated’
- burh ‘fortified place’ Blewbury Brk
- dūn ‘hill’ Bleadon So

brūn ‘brown’, *brūn ‘pig’
- — Brown So
- ford ‘ford’ *Bronsforde* K
- hyll ‘hill’ Brownsall Do
- lēah ‘wood, clearing’ ?Brinsley Nt (or pers n)
- wīc ‘specialized farm’ Brownwich Ha

fāh, fāg ‘particoloured, variegated’
hǣddre ‘heather’ Faweather YW
trēow ‘tree’ Faintree Sa

fealu ‘yellowish, fallow’, *fealu ‘fallow deer’
beorg ‘rounded hill’ Felborough K
lēah ‘wood, clearing’ Fawley Bk, Brk, Ha, Fawsley Nth

geolu ‘yellow’
grǣfe ‘grove’ ?Youlgreave Db (or pers n)

grǣg ‘grey’, *grǣg ‘wolf’
denu ‘valley’ Milnegraden BWK
hyrst ‘wooded hill’ *Greherst* Db
sol ‘wallowing-place’ Grazeley Brk
trēow ‘tree’ Greytree He

grēne ‘green’, *grēne ‘green place’
beorg ‘rounded hill’ Grandborough Bk
dæl ‘valley’ Grindale YE
denu ‘valley’ Grendon He
dūn ‘hill’ Grendon Bk, Nth, Wa, Grindon St
ford ‘ford’ Greenford Mx
gemǣne ‘common’ Mangreen Nf
hamm ‘enclosure’ Greenham Brk
holh ‘hollow’ Greenhalgh La
-inga- ‘dwellers at’ Gringley Nt
lēah ‘wood, clearing’ Gringley Nt
-ling (place-name forming suffix) Garlinge K
stede ‘place’ Greenstead Ess, Greensted Ess, Grinstead Sx
tūn ‘farmstead, estate’ Grinton YN
wīc ‘specialized farm’ Greenwich K

hār ‘grey, hoar’
denu ‘valley’ Harding W
dūn ‘hill’ Horn Down Brk
ford ‘ford’ ?Harford Ha (or hara ‘hare’)
grǣfe ‘grove’ Hargrave Ch, Nth, Sf
hyll ‘hill’ ?Harnhill Gl (or hara ‘hare’), Hernhill K
stān ‘stone’ Harston Lei
weald ‘woodland’ Harrold Bd
wella ‘spring, stream’ Harwell Brk
worð ‘enclosure’ Harworth Nt
wudu ‘wood’ ?Horwood D (or horu ‘dirt’)

hwīt ‘white’, hwīt ‘dairy produce’
- æcer ‘cultivated land’ Whitacre Wa
- ærn ‘building’ Whithorn WIG
- æsc ‘ash-tree’ Whitnash Wa
- burh ‘fortified place’ Whitby Ch (later replaced by ON bȳ ‘settlement, village’)
- cirice ‘church’ Whitchurch Bk, D, Do, Ha, O, So, Wa
- clif ‘cliff’ Whitecliff Do
- ēg ‘island’ ?Whitney He (or pers n), ?Whitton Li (or pers n)
- feld ‘open country’ Whitefield D, Wt, Whitfield Db, Nth
- ford ‘ford’ Whitford D
- hyrst ‘wooded hill’ ?Wheatenhurst Gl (or pers n)
- lēah ‘wood, clearing’ Whitleigh D, Whitley Brk, Ch, W, YW (x2)
- mōr ‘moor, marsh’ Whitmore St
- stān ‘stone’ Whiston YW, Whitestone D, Whitstone Co, Gl
- tūn ‘farmstead, estate’ Whitton RXB
- wella ‘spring, stream’ Whitwell Db, Nf, R, YN
- wīc ‘specialized farm’ ?Whitwick He, Lei (or pers n)
- wudu ‘wood’ Whitwood YW

mǣle ‘variegated’
- beorg ‘rounded hill’ Millbarrow Ha
- burh ‘fortified place’ Melbury D, Do (x2)
- hīwisc ‘(measure of land that would support a) household’ Melhuish D

rēad ‘red’
- burna ‘stream’ ?Radbourne Db (or hrēod ‘reed’)
- clif ‘cliff’ Radcliffe La, Nt, Radclive Bk, *Radeclif* Ch, Ratcliffe Lei
- ford ‘ford’ Radford Nt, Wa, Retford Nt
- hamm ‘enclosure’ Redenham Ha
- hlāw ‘tumulus, hill’ *Radlow* He
- *mylde ‘soil, earth’ Redmile Lei, Rodmell Sx
- trēow ‘tree’ Rattery D
- wella ‘spring, stream’ Radwell Bd, Hrt

rust ‘rust’, *rust ‘rust-coloured’
- halh ‘nook of land’ ?Rushall W (or pers n)
- wella ‘spring, stream’ Rusthall K

salu ‘sallow, dark’
- wearp ‘silted land’ Salwarpe Wo (orig. river-name)

seolfor ‘silver’, ?*seolfor ‘silver-coloured’
- — Monksilver So

tēafor ‘red lead, vermilion’
hām ‘homestead, estate’ or hamm ‘enclosure’ Taverham Nf
tūn ‘farmstead, estate’ Tiverton Ch

Appendix B

Place-name generics qualified by Old English colour terms

æcer ‘cultivated land’
hwīt ‘white’, hwīt ‘dairy produce’ Whitacre Wa

ærn ‘building’
hwīt ‘white’, hwīt ‘dairy produce’ Whithorn WIG

æsc ‘ash-tree’
hwīt ‘white’, hwīt ‘dairy produce’ Whitnash Wa

beorg ‘rounded hill’
blæc ‘black’ Blackborough D
fealu ‘yellowish, fallow’, *fealu ‘fallow deer’ Felborough K
grēne ‘green’, *grēne ‘green place’ Grandborough Bk
mǣle ‘variegated’ Millbarrow Ha

burh ‘fortified place’
blēo ‘appearance, colour’, *blēo ‘coloured, variegated’ Blewbury Brk
hwīt ‘white’, hwīt ‘dairy produce’ Whitby Ch
mǣle ‘variegated’ Melbury D, Do (x2)

burna ‘stream’
blæc ‘black’ Blackbourn Sf, Blackburn La
rēad ‘red’ ?Radbourne Db (or hrēod ‘reed’)

cirice ‘church’
hwīt ‘white’, hwīt ‘dairy produce’ Whitchurch Bk, D, Do, Ha, O, So, Wa

clif ‘cliff’
hwīt ‘white’, hwīt ‘dairy produce’ Whitecliff Do
rēad ‘red’ Radcliffe La, Nt, Radclive Bk, *Radeclif* Ch, Ratcliffe Lei

dæl ‘valley’
grēne ‘green’, *grēne ‘green place’ Grindale YE

denu ‘valley’
grēne ‘green’, *grēne ‘green place’ Grendon He
grǣg ‘grey’, *grǣg ‘wolf’ Milnegraden BWK
hār ‘grey, hoar’ Harding W

dūn ‘hill’
blæc ‘black’ Blagdon So
blēo ‘appearance, colour’, *blēo ‘coloured, variegated’ Bleadon So
grēne ‘green’, *grēne ‘green place’ Grendon Bk, Nth, Wa, Grindon St
hār ‘grey, hoar’ Horn Down Brk

ēg ‘island’
hwīt ‘white’, hwīt ‘dairy produce’ ?Whitney He (or pers n), ?Whitton Li (or pers n)

feld ‘open country’
blāw ‘(blue) pigment’, *blāw ‘blue’ Blofield Nf
hwīt ‘white’, hwīt ‘dairy produce’ Whitefield D, Wt, Whitfield Db, Nth

ford ‘ford’
brūn ‘brown’, *brūn ‘pig’ *Bronsforde* K
grēne ‘green’, *grēne ‘green place’ Greenford Mx
hār ‘grey, hoar’ ?Harford Ha (or hara ‘hare’)
hwīt ‘white’, hwīt ‘dairy produce’ Whitford D
rēad ‘red’ Radford Nt, Wa, Retford Nt

gemǣne ‘common’
grēne ‘green’, *grēne ‘green place’ Mangreen Nf

grǣfe ‘grove’
geolu ‘yellow’ ?Youlgreave Db (or pers n)
hār ‘grey, hoar’ Hargrave Ch, Nth, Sf

halh ‘nook of land’
blæc ‘black’ Blakenhall Ch
rust ‘rust’, *rust ‘rust-coloured’ ?Rushall W (or pers n)

hamm ‘enclosure’
grēne ‘green’, *grēne ‘green place’ Greenham Brk
rēad ‘red’ Redenham Ha
tēafor ‘red lead, vermilion’ ?Taverham Nf (or hām ‘homestead, estate’)

hām ‘homestead, estate’
tēafor ‘red lead, vermilion’ ?Taverham Nf (or hamm ‘enclosure’)

hǣddre ‘heather’
fāh, fāg ‘particoloured, variegated’ Faweather YW

hīwisc ‘(measure of land that would support a) household’
mǣle ‘variegated’ Melhuish D

hlāw ‘tumulus, hill’
rēad ‘red’ *Radlow* He

holh ‘hollow’
grēne ‘green’, *grēne ‘green place’ Greenhalgh La

hyll ‘hill’
brūn ‘brown’, *brūn ‘pig’ Brownsall Do
hār ‘grey, hoar’ ?Harnhill Gl (or hara ‘hare’), Hernhill K

hyrst ‘wooded hill’
grǣg ‘grey’, *grǣg ‘wolf’ *Greherst* Db
hwīt ‘white’, hwīt ‘dairy produce’ ?Wheatenhurst Gl (or pers n)

-inga- ‘dwellers at’
grēne ‘green’, *grēne ‘green place’ Gringley Nt

lēah ‘wood, clearing’
brūn ‘brown’, *brūn ‘pig’ ?Brinsley Nt (or pers n)
fealu ‘yellowish, fallow’, *fealu ‘fallow deer’ Fawley Bk, Brk, Ha, Fawsley Nth
grēne ‘green’, *grēne ‘green place’ Gringley Nt
hwīt ‘white’, hwīt ‘dairy produce’ Whitleigh D, Whitley Brk, Ch, W, YW (x2)

-ling (place-name forming suffix)
grēne ‘green’, *grēne ‘green place’ Garlinge K

mōr ‘moor, marsh’
hwīt ‘white’, hwīt ‘dairy produce’ Whitmore St

*mylde ‘soil, earth’
rēad ‘red’ Redmile Lei, Rodmell Sx

penn ‘enclosure (for animals)’
blæc ‘black’ Black Pan Wt

sol ‘wallowing-place’
grǣg ‘grey’, *grǣg ‘wolf’ Grazeley Brk

stān ‘stone’
hār ‘grey, hoar’ Harston Lei
hwīt ‘white’, hwīt ‘dairy produce’ Whiston YW, Whitestone D, Whitstone Co, Gl

stede ‘place’
grēne ‘green’, *grēne ‘green place’ Greenstead Ess, Greensted Ess, Grinstead Sx

trēow ‘tree’
fāh, fāg ‘particoloured, variegated’ Faintree Sa
grǣg ‘grey’, *grǣg ‘wolf’ Greytree He
rēad ‘red’ Rattery D

tūn ‘farmstead, estate’
grēne ‘green’, *grēne ‘green place’ Grinton YN
hwīt ‘white’, hwīt ‘dairy produce’ Whitton RXB
tēafor ‘red lead, vermilion’ Tiverton Ch

weald ‘woodland’
hār ‘grey, hoar’ Harrold Bd

wearp ‘silted land’
salu ‘sallow, dark’ Salwarpe Wo (orig. river-name)

wella ‘spring, stream’
blæc ‘black’ Blackwell Db, Wo
hār ‘grey, hoar’ Harwell Brk
hwīt ‘white’, hwīt ‘dairy produce’ Whitwell Db, Nf, R, YN
rēad ‘red’ Radwell Bd, Hrt
rust ‘rust’, *rust ‘rust-coloured’ Rusthall K

wīc ‘specialized farm’
brūn ‘brown’, *brūn ‘pig’ Brownwich Ha
grēne ‘green’, *grēne ‘green place’ Greenwich K
hwīt ‘white’, hwīt ‘dairy produce’ ?Whitwick He, Lei (or pers n)

worð ‘enclosure’
hār ‘grey, hoar’ Harworth Nt

wudu ‘wood’
hār ‘grey, hoar’ ?Horwood D (or horu ‘dirt’)
hwīt ‘white’, hwīt ‘dairy produce’ Whitwood YW

THE MEDIEVAL GAZE AT GRIPS WITH A MEDIEVAL WORLD

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1. *Introduction*

This paper gives a general background to visual perception theories available to a medieval readership, and sees aspects of these ideas worked out in early heraldry and its use by romance poets. First, the paper presents some philosophical and literary sources to evidence the manner in which colour and colours attracted symbolic and associative meanings and values. The paper then turns briefly to medieval heraldry as a medium through which meanings and values could be expressed both practically – as a system of martial identification and social display – and for the imagination as a means of communicating complex ideas of identity in literary works. The paper seeks to help reveal an historical colour vocabulary of perception, and thereby underline our need to bring a 'period eye' to the medieval arts – both visual and literary.

In the past colour was seen differently. This naïve statement, supposing that it is in a sense true, reveals the philosophical problem of colour by obliging us to find room in our understanding of 'seeing colour' for more than or other than what is supplied by objective explanations of the apparatus of the eye and brain and the physics of light. Our concepts, framed via our languages, influence and generate our perception of the world, taking hold of our visual sensations and constructing our 'seeing' according to a shared fusion of subject and world. This allows us to talk in terms of perception as a facet of human social and communal life – of shared perception *per se* and its dichotomy of subjective and objective conceptions.

In his *Phenomenology of Perception* (1945:153) Merleau-Ponty developed an approach he terms the "phenomenological reduction", inherited from Husserl (1913), by which we can "re-see" the "inter-subjective" world of "embodied subjects", and through which we discover vision as a "gaze at grips with a visible world". By this we are to find that the visual, if phenomenologically reduced, can be approached and understood without confrontation between objective explanations (the 'eye story', the 'brain story' and the 'physics of

light story', etc.) and an inaccessible, unverifiable world of subjective, privately meaningful experiences. Instead, the reduction reveals the fusion of a perceiver with a world to be a communally developed and developing consciousness within which our explanatory stances and differing ways of talking about the world as an 'object' (i.e. *objectifying* it) are able to exist. More specifically of colour, Merleau-Ponty wrote: "To learn to see colours…is to acquire a certain style of seeing, a new use of one's own body: it is to enrich and recast the body image" (1945:153).

We "learn to see" colour meanings and discover that colour can be instantaneously meaningful (the particular red and yellow that help denote a MacDonald's restaurant, for example). Merleau-Ponty describes the fusing of the individual with his or her perceptual world as a gradual event – it admits of degrees of learning. We gradually learn our perceptual world from what is given to us via our sensations combined with their communally given, shared interpretation. We also then give or pass on our perceptual world to others. What we see and how we see it are intimately conjoined – perception takes place, as it were, at the intersection of 'seeing' and 'thinking'. Ultimately we "…discover vision, not as a 'thinking about seeing', to use Descartes' expression, but as a gaze at grips with a visible world, and that is why for me there can be another's gaze" (Merleau-Ponty 1945:351).

The phenomenological approach holds a unique position as a way of addressing differing communities and cultures and their differing, yet "inter-subjectively" coordinated, perceptual worlds – and also has an in-built sensitivity towards differing historical as well as cultural contexts of perception. If we wish to "re-see" the medieval world with a period eye then we need to examine the distance between and simultaneous 'shared-ness' of our concepts with those of our forebears. Hence, one of Wittgenstein's thought experiments may be considered a gesture towards the medieval gaze:

> Can't we imagine people having colour concepts other than ours? And that in turn means: Can't we imagine people who do not have our colour concepts but who have concepts which are related to ours in such a way that we would also call them "colour concepts"? (Wittgenstein 1979: paragraph 66)

2. *Colour, seeing, and seeing colour in the Middle Ages*

Merleau-Ponty's phrase "a gaze at grips with a visible world" has particular resonance for the Middle Ages when we remember that one of the main pillars supporting the medieval understanding of vision was Plato's *Timaeus* and its theory of vision. Here the gaze literally does 'grip' the world via the emission of a beam or ray of fire from the eye which interacts with the fire of the world

to transmit sensation – tremors – to the soul whenever its connection to the external fire is interrupted by contact with an object:

> The eyes were the first organs to be fashioned by the gods, to conduct light. (…) They contrived that such fire as was not for burning but for providing a gentle light should become a body, proper to each day. Now the pure fire inside us, cousin to that fire, they made to flow through the eyes. …Now whenever daylight surrounds the visual stream, like makes contact with like and coalesces with it to make up a single homogeneous body aligned with the direction of the eyes. This happens whenever the internal fire strikes and presses against an external object it has connected with: …it transmits the motions of whatever it comes in contact with as well as whatever comes in contact with it, to and through the body until they reach the soul. This brings about the sensation we call "seeing". At night, however, the kindred fire has departed and so the visual stream is cut off. (Plato 2000:33.45b-d)

This extramissive theory of vision draws its understanding by analogy with the sense of touch, so that seeing is touching with the eyes. The extramissive approach to understanding sight – the notion that something is sent out from the eyes into the world in order to bring about vision, has a varied and complex history in ancient thought. Its main conceptual alternative, the intromissive theoretical stance (whereby vision is produced by the introduction of external information to the eye), can also be detected within the account above from the *Timaeus*, given that the tremors in the beam of fire are also, in a sense, returning information back into the eye. However, it is the extramissive aspect of the conception which pervades popular medieval understanding of vision, and the notion of perspective in intellectual understanding is predominantly one in which the geometrical and mathematical usefulness of 'eye-beams' (drawing from Euclid, Hero, Ptolemy and others) as a tool for investigating spatial relations overshadows other concerns.

However, most significantly, the concept of affective piety (by which the medieval penitent would engage at a distance with a religious object of devotion) draws confidence from the tactile model of the Platonic conception of vision. Indeed, the popularity of the Platonic theory was perhaps secured by its compatibility with that other pillar of medieval understanding, the Bible, in terms of which the inherent value of light and 'true seeing' is found in its relation to revealed truth and God's relationship to his creature, Man. In apparent sympathy, in the *Timaeus* we find that the final cause of seeing is knowledge: "…the god invented sight and gave it to us so that we might observe the orbits of intelligence in the heavens and apply them to the revolutions of our own understanding" (Plato 2000:35.47b-c).

The importance of the visual and its intrinsic value as the means to understanding chimes with the numerous biblical uses of light as a metaphor and the role of the visual in encoding the truth of revealed knowledge and the Incarnation of the divine – God becoming Man and entering the world to save his people from themselves.[1] This centrality of the visual in Christian theology, and its dominant place influencing medieval thought, has been aptly described by Katherine Tachau as "the nexus of natural philosophy and epistemology, all ultimately at the service of theology" (1988:xvi).

Thus we can see that relatively little work needed to be done by Christian Neo-Platonists from St. Augustine (354-430) to William of Conches (c.1085-1154) in order to find the ideas concerning vision in the *Timaeus* usefully compatible with Christian theology. Augustine articulates his belief in eye-beams in the following terms:

> …surely the emission of rays from our eyes is an emission of a certain light. And it can be gathered that this [light] is emitted, since when we look into the air adjacent to our eyes we observe, along the same line, things situated far away. Nor does this light sensibly fail, since it is judged to discern fully objects that are at a distance, though surely more obscurely than if the power of sight should [itself] be sent to them. Nevertheless, this light that is in vision is shown to be so scanty that unless it is assisted by an exterior light, we cannot see anything. (Augustine 1894:23)

Further to the general significance of seeing and light shared by the twin authorities of religion and antiquity, the active thought which defines vision in the *Timaeus* – the perceiver reaching out to grasp the world using the eye and its fiery beam – is paralleled with the New Testament description of the eye as the "lamp of the body" (Matt. 6:22), and so plays a part in Augustine's adaptation of Platonic Ideas (and our access to them) via the notion of divine illumination. Thus Augustine is able to fuse Christian theology of the *logos* and "light of the world" with the Platonic sense of seeing being 'for' understanding. The higher things proposed by the Platonic philosopher and addressed as perfect or true Ideas or Forms, Augustine re-saw (via other Neo-Platonist thinkers such as Plotinus) in terms of a hierarchy of truth emanating from God to his created world and creatures – an outpouring down through the angels to

[1] Amongst the myriad Biblical references to the significance of light and colour are to be found: the creation *ex nihilo* (Gen. 1:1-4); the rainbow symbolizing the covenant of mercy with Noah after the Flood (Gen. 9:13); mankind's prophesied salvation (Isaiah 1:18); the incarnation as light / illumination entering the world (John 1:1-9); God as the constant Light and Father of 'lights'; light as the source of the good (James 1:17); the new world after the second coming of the Christ in which darkness is past, and 'true' light , the Lamb, reigns (Rev. 21:23).

men and then beasts. This path of light and its illumination of worldly darkness entails an active experience of and participation in God's projected truth for humanity. The scriptural personification of truth and light, Jesus, fulfils the role of the terminus of the divine illuminating ray – the point at which divine light meets human darkness. Hence Jesus, who said, according to one Gospel writer, "I am the light of the world: he that follows me shall not walk in darkness, but shall have the light of life", as God's Son, through his death and resurrection revealed the action of light triumphing over darkness: light and dark not being able to co-exist in the same space (John 8:12; 9:5). Thereafter the darkness-loving human beings had a way back to the light, by which the blind could see; that is, the *spiritually* blind could receive 'true' sight just as the physically blind could have their physical sight returned by divine miracle.

It is perhaps not surprising that the conceptualization of eye-beams, through which sight operated as a form of touch and by which an external truth was accessed and activated, aided conceptualization of both religious piety and secular phenomena of devotion. In medieval romance, it is a commonplace for lovers to fall for each other via the action and penetration of fiery eye-beams – for falling in love to be represented in terms of an act of seeing whereby seeing the other was an action through which one or both of the lovers experiences a moment of genuine contact at a distance. There is room for a useful imaginative overlap between the action of the amorous darts of a love god such as Cupid and the self propelled darts – with their direct link to the soul – issuing from a lover's own eyes.

Moreover, the role of fiery eye-beams in forming the bonds of love extends beyond the bounds of fiction or religion, for instance in Geoffrey of Monmouth's epic prose history of the British kings, the *Historia Regum Britanniae* (c.1138), he describes a tournament during which the watching ladies 'inflame' the men with their gaze (so that they compete harder).[2] However, it is in the sophisticated court romances such as Chrétien de Troyes' *Cligés* (1176) that we find the matter and its theory put in most explicit detail. The lover's 'gaze' is described thus by the lover:

> You may be sure the same is true of the eyes as of the glass and the lantern. *[Inside of which would have been a candle.]* For through the eyes comes the light by which the heart views itself and sees the outside world, whatever it may be. It sees many different objects, some green, others violet, one scarlet, another blue, finding fault

[2] "Mulieres in editou murorum aspicientes in furiales amoris flammas ioci irritant" (The women, gazing on from the high walls, excited frenzied flames of love") (Geoffrey of Monmouth 1929: ix:14.).

> here, praising there, having a low opinion of one, prizing another. But something may seem attractive to the heart when it looks at it through the mirror which may deceive it if it is not wary. My own mirror has betrayed me badly, for in it my heart saw a ray of light that has afflicted me by lodging within it, causing my heart to fail me. (McEvoy 1982:18)

Here is an application of the *Timaeus* concept; through the eyes a light is emitted which enables the heart/soul to truly 'see', and furthermore, what is seen is rendered simply by its various colours. Eventually the heart's visual connection to the world brings about its romantic ruin or betrayal – because it makes contact with another's heart's "ray", which enters the lover's heart through the eye, to lodge there and cause the heart a permanent affliction. A direct connection to another's heart or soul is made, through which the tremors of both hearts are transmitted directly to each other, which amounts to a betrayal because the lover's control over what he or she might otherwise choose to reveal of themselves is circumvented.

Chrétien's description of the 'seen' *as* colours also shows the emerging third pillar of medieval understanding – that of Aristotle, – known as 'the Philosopher' due to his authoritative status for medieval thinkers. A key moment in what is now referred to as the 'twelfth-century renaissance' was when Aristotle's *De Anima* was translated out of Greek into Latin by James of Venice in c.1150, thus recovering access to, amongst other things, Aristotle's most complete thoughts on sensation and perception. The ideas it contained helped to establish a new, fundamentally intromissive and passive mode for understanding visual perception, which has lasted, in its rudiments, into contemporary theories and methodology. The new approach was in significant contrast to the predominant mode of Neo-Platonic thought, and was to be frequently commented upon and variously interpreted by subsequent proponents: notably by Thomas Aquinas (1225-74) via Arab commentators such as Averroës and Avicenna, and from the Greek by Oxford's Robert Grosseteste (c.1168-1253) and his admirer Roger Bacon (c.1214-92). Grosseteste, for example, embraced the Aristotelian pursuit of natural final causes but related it back to 'thinking God's thoughts after him' such that, in his masterpiece *De Luce* (c.1225), he presents a cosmology that is rooted in Aristotelian concepts yet takes as its starting point the original light produced by God's command (McEvoy 1982:18). Nature's regularity and economy is thence seen to conform to an overall supernatural design.

The differences in understanding that begin to emerge through the influence of Aristotelian thinking were between the intromission as opposed to extramission of the visual sense in the first instance, and the nature of the

intellectual soul in the second.[3] Whilst it can be said that the emergent intromissive understanding was dominant in educated circles by Chaucer's lifetime (c.1343-1400), this does not mean that the popular extramissive understanding had simply been replaced. Chaucer makes use of both for the various purposes of his fictions.[4] They co-existed, with the extramissive model in evidence in popular culture beyond the Renaissance.

Sensation and perception in Aristotle's *De Anima* are essentially passive affairs involving the 'intromission' of the 'sensible' by the 'sensitive'. Aristotle describes our five external senses via their receptive organs, three of which have their own proper objects, whilst all participate in the experience of "common sensibles" such as shape or movement (although the status of the latter is disputed by Grosseteste and others, who argue that movement involves perceiving the passage of time, which must involve the action of the internal senses, i.e. some aspect of the memory). The senses altogether produce our sensitive faculty through which we are acted upon by the world (a process that sees us temporarily corresponding to it and becoming it), being assimilated as our potentiality to register a particular sense comes to register it in actuality:

> …the sensitive faculty is such as the sensible object is in actuality. While it is being acted upon, it is not yet similar, but, when once it has been acted upon, it is assimilated and has the same character as the sensible object. (Aristotle 1986:II.418a)

Hence colour is the proper object of sight and its organ is the eye and yet sight participates with the other senses in the perception of a "common sensible" like size or shape:

> The object then of sight is the visible: what is visible is colour…colour is universally capable of exciting change in the actually transparent, that is, in light; this being in fact the true nature of colour. (Aristotle 1986:II.418b)

The teleology of Aristotle's philosophy establishes a mutual dependence between the means and ends of perception, so that the organs of sense passively 'assimilate' their objects. Colour, the visible form of light (which he describes

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[3] Aristotle denied the immortality of the soul, using the word to refer to the complete system of 'internal senses', by which human consciousness was attained.

[4] See, for an 'extramissive' reference, *Troilus and Criseyde* (III, line 128ff) (Chaucer 1987:515); and, for a recently educated character, drawing a distinction between looking and acting, see Nicholas in *The Miller's Tale* (line 3590ff) (Chaucer 1987:73).

as "the presence of fire or something fiery in the transparent"),[5] enters the eye and brings about perception by converting the potentiality of the organ of sense into its having the same character as the colour. In relation to the external senses are the internal senses by which sensations are interpreted, acted upon and recorded. Their number varies according to different medieval Aristotelian scholastic commentators, their interpreters and illustrators, but they typically number five and include aspects of what we might describe today as functions of visual data manipulation and storage.[6]

The significance of Aristotle's model of perception is in its move from an active to a passive model for sensation, and in locating the active intellect (the soul) within the body – to be almost akin to its 'life' or vitality – and explicitly linking the two. As such, the emphasis in perception shifts to the object being perceived as maintaining and passing on the content of its signification from itself to the perceiver, as opposed to this coming from the perceiver. How, exactly, such inferences were taken from the world – how the object acted on the subject - was hotly disputed, especially regarding the exact nature or even existence of the intervening *species* or sensible *ideas* of the objects that brought the visual sensation to the eye. (On this point Aristotle was himself ambiguous, allowing room for much interpretive licence. In one sense, 'contact at a distance' is maintained, so that instead of the object directly touching the eye, a

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[5] Lawson-Tancred's translation brings out the subtlety here, "…light is as the colour of the transparent, when it is rendered transparent in actuality by fire…light…is not fire or in general a body…but the presence of fire or something like it in the transparent" (Aristotle 1986: II.418b).

[6] Popular medieval understanding of Aristotle's theory came via Avicenna and other Arabic commentators. A diagrammatic portrayal is found in MS Cambridge, University Library, Gg.1.1, fol. 490v (c.1310). The five internal senses are represented as separate areas within the head and named as follows (taken from Camille (2000:199-201):

i. *Sensus communis vel sensatio*: by which the various sense impressions are amalgamated to provide a compound perception.

ii. *Ymagination vel formalis*: by which the compound sense perceptions are retained after initial sensation.

iii. *Cogitativa vel formalis*: by which things in the imagination can be combined or divided at wish.

iv. *Estimativa*: by which non-sensible intentions are perceived, e.g. that the lamb is safe, whilst the wolf is not.

v. *Vis memorativa*: by which the intellectual soul stores its perceptions.

Aquinas reduced this to four internal senses. However, five internal senses balancing five external senses was the more popular understanding – its neatness and sense of order perhaps more attractive for a theologically understood universe. Aquinas' simplification in the *Summa* (1963:part 1a., question 78), combining the second and third senses into one, although efficient, may have seemed counter-intuitive.

species of the object crosses the intervening space to do so.) The concept of an intervening *species* of the object between it and its perceiver helps explain pictorial representations of seeing in the medieval arts in which insubstantial, successive, repeating images of an object are depicted between it and the perceiving subject.

A fundamental shift was at work in which concepts of the 'sensible', the 'sensation' and the 'sensitive' were being isolated. A literary representation of Aristotelian sense impression and the new breed of intromissive visual perception is to be found in the medieval saying "beat a dog to tame a lion" used, for example, by Chaucer in his *Squire's Tale* (line 491) to express learning by example: the lion's imagination was considered to be directly impressed upon by the model of submission it had witnessed.

So far colour has been mentioned but sparsely, the significance of light in Christian theology overshadowing all else for western medieval society and its thinkers. However, the importance of colour in the medieval world should not be underestimated or entirely surrendered to that of light. Chromatic perception could be assumed under this umbrella, leaving colour (or fire) simply 'as' light. Indeed, Calcidius' translation of *Timaeus*, through which medieval contact with the work was possible, stops at paragraph 53b, well ahead of the discussion of individual colours as the particular "flames from bodies", with different colours being perceivable by their relation to the fire emanating from the perceiving eye.[7] However, understanding colour as being, after a fashion, light, and different colours as differing levels of brightness, although pervasive, sits uncomfortably with the Aristotelian position of regarding colour as the proper object of sight with light somehow its carrier. Aristotle's point that "the object of sight is the visible and what is visible is colour" was a stage in his progress towards the idea that colours "produce change in the transparent", the transparent being "the visible", but only in virtue of its receptivity to colour. The point is very difficult and perhaps not fully grasped by Aristotle's unknown disciple who, in writing *De Coloribus* (a work wrongly attributed to the Philosopher during the Middle Ages), says "…visibility is impossible in any way except by light" but also decides that "…the colour of fire is light" (Aristotle 1936:I.791b). Any distinction between light and colour is difficult to

[7] Timaeus says of colours, "Colour is a flame that flows forth from bodies of all sorts, with its parts in proportion to our sight so as to produce perception". He specifies the nature of transparent, black, white, bright, red, orange, purple, violet, grey, amber, beige, cobalt blue, turquoise and green in terms of the relations between the perceiver's 'ray' and the flames of bodies. He notes that some colours are admixtures of others (Plato 2000: 61-2.67c-68d).

draw on the intromissive model, given its notion of a transition from the potential to the actual, which moves the existence of colour to an internal change. In Aristotle's words, which herald the essential 'inner' and 'outer' dilemma of colour theories past and present: "For in a manner light, too, converts colours which are potential into actual colours" (Aristotle 1986:III.430a). Medieval scholars had difficulty wrestling with Aristotle's profound problem regarding potential and actual colours which inhabit light (as a "receptacle") and are transmitted by it, finding the interpretation in *De Coloribus* perhaps more readily conceivable: colour and light being the same, with colours differentiated as levels of brightness. However, the theory could also be made to yield a similar hierarchy to that of the Neo-Platonic / Christian conception of divine illumination and its progress of revealed truth, but in terms of brightness as colourfulness.

Supporting this hierarchical thought was another (more practical and popular) discussion of colours found in Aristotle's *De Sensu et Sensato* (part of the *Parva Naturalia*), in which they are related to light and dark – white and black – via varying chemical mixtures of the same. "Thus the same conditions which in air produce light and darkness, in bodies produce white and black" (Aristotle 1955:231.439b, line15ff), and, "But it is clear that colours must be mixed when the bodies in which they occur are mixed, and that this is the real reason why there are many colours" (Aristotle 1955:237.440b, line15ff). The effect of this understanding was to foment notions of primary, mediary and sub-mediary colours in terms of their relationship to the white / black dichotomy and its basis in a light / dark differentiation, thereby enabling a hierarchical perception of the visual to be established and, indeed, flourish.

3. *Medieval colour values*

Having considered the pertinent philosophical ideas, we should have been helped to start re-seeing a medieval world for which colour was as much a defining quality as shape (e.g. part of the fox's 'foxiness' is its redness).[8] We should also expect to find evidence of colour implying a value in line with a

[8] This understanding contrasts with that which underlies much of contemporary thought and debate since Locke's assessment of colour as a 'secondary quality'. For Locke, since colour does not have the same quality of objective reality as shape or form, it must be 'added in' by the mind. Thus, secondary qualities "in truth are nothing in…objects themselves, but powers to produce various sensations in us" (Locke 1975:II.viii.10). This view, content to leave colour as an epiphenomenon, is perhaps reflected in the attitude that colour is not an intrinsic property of an object, and evidenced by the 'human' experience that things can be colour-ed according to choice.

hierarchy of colourfulness (on a model such as that regarding differing colours as levels of brightness, as considered in *De Coloribus*) or indicating values in line with possible hierarchies of hues drawn from the example colours as chemical mixtures which decline from a pure state, as in *De Sensu et Sensato*.[9]

This approach to seeing (and the visual world) is indeed to be found in matters of social prestige and status during the medieval period. For example, the fourteenth-century Sumptuary Laws in England judge society in terms of its wealth and prescribe costume materials for each level, which would have effectively colour-coded the populace according to their income (had the laws not been generally disobeyed in obedience to the stronger social force of aspiration).[10] The religious value of colourfulness as an indicator of divinity would seem to have been put to underwriting an evaluative mode of perception, the significance of bright colours being readily apparent from the practices and decorations of the medieval Church. Hence Theophilus the monk (c.1110-1140) wrote the following to inspire some artisans regarding their decoration of the interior of a church:

> By setting off the ceiling panels and walls with a variety of kinds of work and a variety of pigments, you have shown the beholders something of the likeness of the paradise of God, burgeoning with all kinds of flowers, verdant with grass and foliage. (Theophilus 1979:79)

In contrast, those who were considered to be displaying themselves via bright colours (for their own glory) were liable to be considered proud and sinful. In his tale Chaucer's parson includes a devastating attack on the sin of 'superfluity' with regard to certain styles of notably colourful clothing. He

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[9] Aristotle describes 'simple' colours as belonging to the four elements: fire, air, water, and earth, all of which are naturally white but which appear as colours according to the affects of transformations and in their relations to light and dark (Aristotle 1936:I.791a). Aristotle also had the notion that "…colours must be mixed when the bodies in which they occur are mixed", and the view that the multiplicity of colours is due to the ratios of chemical components in combined material, the combinations declining from a notion of chemical 'purity' being of great interest to medieval alchemists (see Aristotle 1955:III.440b).

[10] The Sumptuary law of 1363 includes the imperative: "Also, that carters, ploughmen, drivers of the plough, oxherds, cowherds, shepherds, swineherds (…) and other people that have not forty shillings of goods nor of chattels, shall not take nor wear any manner of cloth but blanket and russet**,** of wool, worth not more than 12d, and shall wear girdles of linen according to their estate…" on pain of forfeit. "Blanket and russet" determined a range of grey and brown apparel for this class. The stipulation of "not more than 12d" in value implied that expensive dyeing and decoration was out of the question. (See Myers 2002:IV.1153-1155.)

considers such habits to be sexually provocative and wasteful of resources that should go to the poor. He preaches:

> And mooreover, the wrecched
> Swollen membres that they shewe thurgh disgisynge,
> in departynge of hire hoses in whit and
> Reed, semeth that half hir shameful privee
> Membres weren flayne./ And if so be that
> They departen hire hoses in othere colours,
> As is whit and blak, or whit and blew, or blak
> And reed, and so forth,/ thanne semeth it, as
> By variaunce of colour, that half the partie of
> Hire privee membres were corrupt by the fir
> Of seint antony, or by cancre, or by oother
> Swich meschaunce. (Chaucer 1987:301, lines 424-427)

Here the Parson echoes a general line of reactionary criticism, that the wearing of bright colours was indicative of a sinful nature (in addition to his castigation of revealing and provocative *styles* of clothing, a fault of medieval men especially). Chaucer's characterization of him gives also, perhaps, a sense of a personalized, idiosyncratic zealousness for the subject. The reference to white, red, and parti-coloured hose and their symbolic values of lust and corruption by the "fire of St. Anthony" (some sort of itchy venereal disease) would seem also to point towards other characters in *The Canterbury Tales*, perhaps the Merchant and the Squire. Whilst this might seem humorous today, and its excess may have been comic, the profundity of the concepts being masterfully employed by the fourteenth-century writer should be kept in mind. Theophilus' advice to twelfth-century Church artisans continues:

> A human eye cannot decide on which work it should first fix its attention: if it looks at the ceiling panels they bloom like tapestries; if it surveys the walls, the likeness of paradise is there; if it gazes at the abundance of light from the windows, it marvels at the inestimable beauty of the glass and the variety of this most precious workmanship. But if a faithful soul should see the representation of the Lord's Crucifixion expressed in strokes of an artist, it is itself pierced. (Theophilus 1979:79)

With this comment we see the extramissive model of visuality combining with an evaluative perception of light and colour. The pious soul is said to be "pierced" by the representation of the divine suffering – by the same means as we found the lover bound to the beloved and "betrayed" as an independent self. The means of this affective pity is light and colour, with both, as we have seen, ultimately being of elemental fire via the classical authorities of Aristotle and

the *Timaeus* and re-conceptualized through Christian theology. The line of thought from light and colour to values was inexorable and demanded respect.

4. *Heraldry and the colouring of identity*

Perhaps nothing exemplifies the evaluation of colour being, as it were, 'built into' medieval perception more than the phenomenon of heraldry. The armorial sign and symbol system which arises in the twelfth century from previously *ad hoc* practices of identifying warriors on the battlefield involves colour ('tincture' as it is known in the heraldic language of *blazon*) at far more than the functional level. If we consider first how heraldic display was thought of as operating within codes of chivalry then we can see that it was inevitable that it should become a major participant in the medieval hierarchical structuring of visual perception.

Catalan theologian Ramon Lull (c.1232–1316) in his *Book of the Order of Chivalry* writes of a knight's coat of arms as his identity badge which defines his place within the socio-ethical code of chivalry and provides the means of public accountability for his behaviour:

> A coat is given to a knight / in significance of the great travails that a knight must suffer in order to honour chivalry (…) A token or signal of arms is given to a knight on his shield and on his coat / so that he be known in the battle (…) The signal is also given to a knight / so that it be known if he be a friend or enemy of chivalry / wherefore every knight ought to honour his signal (…) The banner is given to a king, a prince, a baron & to a greater knight …/ which has under him many knights / to signify that a knight ought to maintain the honour of his lord / and of his land… (Lull 1926:87-89)

For Lull, the coat (worn over the armour) signifies the knight's special role as one who must suffer to honour chivalry. On the knight's shield is again the "token or signal" of arms to identify him in battle – a measure that is required not merely for the practical purpose of distinguishing between combatants, but also so that his deeds might be recognized as either honourable or not, as 'of chivalry' or 'putting him outside' chivalry. Thus the knight's signal is envisaged as his key to honour and chivalry, and hence should in itself receive honour. This is maintained up the social scale in terms of a lord's banner signifying the honour of a king, prince, lord or greater knight and that of his land. The matter of armorial identification is set out by Lull to nail a knight to his honour and conduct within chivalry – this being of supreme importance – and, through its connecting value, lending value to the identifications

themselves so that they become, as it were, the honour of a knight, a lord, a land and thereafter the dynasties of those individuals.

The role of colour within this system works in the first instance as an aid to identification and indicator of identity for the public's scrutiny of the bearer. This notion was employed to great effect by writers of romance. The practical means of identifying a particular knight by the charges on his coat and shield allowed the knight to be memorably tagged and so could be used as a shorthand indicator of a knight's identity. Furthermore, the simple matter of one knight wearing another knight's coat of arms provides the plot vehicle for many romances examining identity. *Blazon*, the code by which armorial identifications were recorded, was also utilized in romances to highlight identity in relation to behaviour. In Chrétien de Troyes' *Erec and Enide* we find an early example (c.1170) of what literary historian Gerard Brault would call "true heraldry" in a romance (Brault 2003:16). Erec is insulted by an unknown knight and seeks his name:

> My good host, if you don't mind, tell me, if you know, the identity of a knight wearing arms blazoned with azure and gold who passed by here a little while ago with an elegant maiden very close by his side and a hunchbacked dwarf ahead of them. (Chrétien de Troyes, *Erec and Enide* 8, lines 581ff)

Later in the same story Erec encounters a "crimson knight" in a garden, protecting a girl lying on a silver bed – that is, a knight evidencing what Brault calls "quasi heraldry" (Chrétien de Troyes, *Erec and Enide* 78, lines 5878 ff; Brault 2003:16). The contrast with accurate blazon begs the question of how we, if wishing to achieve a period eye for reading such scenes, are to engage with the apparent colour symbolism in the range of red, blue, green, black and white knights littering medieval romances, beyond its role in basic character differentiation. In *Erec and Enide* we are aided by the location of the crimson knight and his charge in a garden, a typical romance motif, to think in terms of an allegorical meaning, but the matter is not always clearly signposted.[11]

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[11] The symbolism in this situation works as a microcosm of the courtly question that Chrétien is exploring in *Erec* as a whole, i.e. investigating the priorities a knight should have in relation to his errantry and his 'love' (especially after love's domestication). The crimson knight's situation is in fact a variation of Erec's own. He made a *don contraignant* to his lady only to discover that she wills him to remain by her side within the garden (at the expense of his honour) until he is defeated by another knight. This duty to love and its resulting imprisonment costs the crimson knight his love. Erec, by defeating the crimson knight, releases him from dishonourable servitude. The crimson knight thus suggests a symbolic colour reading of red for both passion

A way of seeing the "true" and "quasi" heraldry distinction in medieval romances is through its links (via chivalry and wider notions of hierarchy and values) to medieval ideas regarding visual perception. Certainly by the late fourteenth century there existed armorial treatises in England and Wales written and discussed by such men as Bartolo di Sasso Ferrato, Johannes de Bado and Bishop John Trevor which attempted to fuse the practical and symbolic uses of colour in heraldry in order to debate the question, "Which colour is the most honourable?" and constructing answers using quasi-Aristotelian conceptions of 'brightness' and an ordering of chromatic 'primacy'.[12] In Trevor's Welsh *Llyfr Arfau* (*Book of Arms*, c.1395) he argues:

> Although Bartholus maintains that black is the most inferior colour, it is seemly to accept the view of the Philosopher who says that the two chief colours are white and black because all mediary colours are formed artificially from these two and of these two colours the nobler is the white, and this for three reasons: firstly because it is the foundation of all colours, and it can be converted into every mediary and submediary colour: secondly because white is the only colour that has a direct counterpart and its counterpart is black: thirdly, because no other colour can be seen as far away and as clearly as white. And this colour signifies light, and the opposite of white is black which is less honourable than white as the Philosopher says in his book… (Jones 1943:11)

This was a very difficult game to play. Citing some colours above others for an abstract hierarchy of honour may well have indiscriminately caused offence to nobles bearing "mediary" tinctures or even the "sub-mediary" tincture (green / *vert*), and, if taken seriously, would have resulted simply in the predominance of white / silver and black (*argent* and *sable*) in heraldic display. Indeed, the evaluative approach to colour in heraldry did prove problematic as shown by the retraction given by Nicholas Upton in his *De Studio Militari* (c. 1446) of his own condemnation of *vert*, as being "a shameful act of his impressionable youth" (Upton 1931:5). Heralds and armorial theorists have since condemned the practice of evaluating devices by abstract measures; one recent herald, Oswald Barron, is not alone in taking the view that, "At the beginning they go astray seeking symbolism and an inward significance in every sign upon the

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and secular martyrdom. It might even have been read to indicate a certain sense of shame or embarrassment for the wilful usurpation of knightly honour caused by the denial of errantry.

[12] It is possible that this spate of medieval heraldic treatises was connected to the Scrope versus Grosvenor lawsuit of 1386-7. Both nobles claimed the same arms (*azure a bend or*: blue with a gold stripe) and the matter was only resolved (despite a court case at which much of the nobility of the land testified) by a personal judgement by Richard II.

painted shield" (Jones 1943:xii). The point, however, is that, given the evaluative nature of the phenomenon of colour at the time, it seems inevitable that heraldry should have participated in this. What is interesting is that, whilst "true" heraldry could not sustain a strict hierarchy of colour values, given its functional role in the society, the "quasi" heraldry of romance could conceptualize colours according to the rich culture of evaluative and symbolic perceptual meanings, whilst at the same time playing with the outward form of "true" heraldry and borrowing its essential links with identity, chivalry and the publication of character.

To exemplify this and conclude, note the late fourteenth-century romance *Sir Gowther* (Mills 1973), in its employment of a hierarchy of "quasi" heraldic colours to symbolize the transformation of a personality. In *Sir Gowther* (author unknown) the protagonist, like Merlin, is born of a woman deceived and impregnated by the 'fiend' (line 14) and hence is dominated by an evil and violent disposition. As a baby he killed his nurses (line 110), as a man he rapes nuns (line 185) and burns churches (line 167). The penance for his sins, dictated by the Pope, is not to talk or eat anything other than that which he can "snatch from the mouths of dogs" (line 293). Whilst following this prescription and wandering the land, Gowther comes to an emperor's court. The emperor has a beautiful (but mute) daughter who is desired by a Turkish lord (line 370). War ensues and Sir Gowther prays for arms so that he might be able to help his lord in the fight. He is miraculously granted black armour and a black horse (line 406). On a subsequent occasion he is granted red armour and a red horse (line 460). The third time it is a white horse and white armour (line 555). Each time Gowther fights well and after the third grant he rescues his lord from the enemy (line 620). Thereafter he continues to fulfil his penance until the Pope releases him (line 667) and he marries the grateful emperor's daughter (miraculously cured of her muteness), and is allowed to eat at table again (line 683); ultimately he undoes his past evil by helping the poor and building a new church (line 710).

Obviously there is a sequence of "quasi" heraldic colours at work suggesting a hierarchy: there is an 'armorial meaning' intended to stand apart from the (by the late fourteenth century) established rules of heraldry, according to which the idea of one person bearing different coats of arms contravenes the dynastic rationale. Thus we see the "true" and the "quasi" in their proper places. The 'quasi' codifies the protagonist's spiritual journey with colours symbolizing an expiation of sin (from black to white via the mediary, red: Gowther's redemption being accomplished by the sacrificial blood of Christ) as opposed to identifying an individual's physical status. Hence the story of *Sir*

Gowther is an edifying romance bordering on the popular genre of saint's life (he ends up buried under a golden shrine (line 725), another feature which helps the reader decode the hierarchy of symbolism).

In *Sir Gowther* (not all romances – it is a diverse genre) the dilemma of matching up and interpreting the changing external signs with the interior character is neatly solved, since the intrinsically revealing armour is miraculously granted by God: thus the colour of the armour is able to operate as a colour sign immediately readable by medieval eyes.[13] As God's gift, one cannot argue with the authenticity of Gowther's armour as a symbol publishing the condition of his soul during its moral journey. Other (non-miraculous) colour signs operate in the same story, for instance the portrait of the emperor's daughter "white as floure" (line 371) and Gowther's mother "hur rod reyde as blosomes on brere" (line 35), which appeal to standard colour values (purity and courage) inhering in medieval perception. However the writer gives Gowther's armour evaluable colours so as to reveal a set of transcendent values, which is an act of creation enabled by and reinforcing the conceptual structure of the medieval imagination.

5. *Afterword*

Chaucer wrote, "A blind man can nat juggen wel in hewis" (*Troilus and Criseyde* II, lines 19-21). The "blind man" was Chaucer himself, who, as the narrator in *Troilus and Criseyde*, claims he has not experienced love and is thus unable to comprehend it in others (and so would avoid responsibility for retelling a sad story). But the saying might be more widely applied to remind us that a 'seeing' man cannot "juggen wel in hewis" if he does not yet know how to judge hues, or understand that "hewis juggen" is indeed going on and is part of the act of 'seeing' for the medieval perceiver. We are all blind so far as the 'medieval gaze' is concerned if we have not learned to see colours as they were seen in the past.

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[13] The reverse effect is achieved in *Sir Launfal* (a Middle English version of a twelfth-century work: Marie de France's *Lanval*), also written in the late fourteenth century, by the protagonist's magical armour miraculously changing colour from white to black, symbolizing the knight's loss of honour and the armour's lost efficacy (lines 742-743).

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