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The colours of the Arctic

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1. Introduction

Research into colour terminology across a wide range of languages has, since the seminal work of Berlin & Kay (1969), established beyond a doubt a link between the physiology of the human visual system and limitations on the expression of colour in individual languages. There is considerable evidence for a hierarchical order of emergence of more detailed systems of basic colour words from a simple binary opposition between “dark” and “light” colours (as found in some equatorial languages) to the full array of primary colours (and beyond) typical of European languages, although the exact nature of this hierarchy has been questioned and revised over the years. The evolutionary order of emergence is as follows: black and white precede red, red precedes green and yellow (together), green and yellow precede blue, blue precedes brown, and brown precedes purple, pink, orange and gray (as a group).¹

Less emphasis has been paid to the influence of cultural and physical environment on the expression of colour, although it is widely

¹ The conjoined items can be added in any order within their group, but both/all must be expressed as individual basic words before the next stage. Kay & McDaniel (1978: 639) added the possibility of ‘gray’ appearing earlier in the sequence for some languages.

acknowledged to exist.² This is in fact the basis of serious criticism that has been raised against the whole approach by linguistic relativists such as Lucy (1997). There would seem to be a degree of truth in both approaches to expressions of colour, but there is still a surprising dearth of studies over large geographical areas aimed at trying to factor out the universally cognitive from the culturally and geographically specific. Mesoamerica in the work of MacLaury (1997) is a notable exception. In the present survey I shall be looking at colour terms in the languages spoken in the Arctic and adjacent sub-Arctic by people who have been living in the Far North since pre-historic times. Although it might be thought that this is a rather uniform environment with relatively few salient colours, considerable variation in colour terms is nevertheless to be found. The survey goes all the way from Greenland via the Canadian Arctic and Alaska over the Bering Strait to Siberia, covering a number of different environment and subsistence types.

As I shall demonstrate, colour terms in Eskimo-Aleut and the Chukotian branch of the Chukotko-Kamchatkan family present a number of problems for hierarchical colour term theory and reflect rather directly the physical environment and subsistence patterns of the peoples who speak them. I should add a general warning at the outset: the colour words I shall be introducing below as “basic” do not necessarily have that status according to Berlin & Kay’s original definition, since many if not most of them transparently refer to items displaying a certain colour that have particular salience in the Arctic environment – sometimes they even contain an overt suffix meaning ‘something like’. I shall mention deviations from the expectations deriving from Berlin & Kay’s work as they occur.

2. Eskimo-Aleut

Quite detailed information on colour terminology is available for the Eskimo-Aleut languages. These are spoken along the Arctic and sub-Arctic treeless coastlines and up the major Alaskan rivers like the Kobuk, the Yukon and the Kuskokwim, where trees are more plentiful. The traditional

² Berlin & Kay (1969: 16-17) already surmised that as cultures evolve and become more complex they encode more basic colour categories, a corollary of which is that less evolved cultures may have a higher percentage of object-specific “non-basic” terms, sufficient for their needs.

subsistence way of life of their speakers is that of marine mammal hunters or (especially in West Greenland) coastal or (in Alaska) riverine fishermen, with inland hunting a secondary pursuit in most areas. The territory spreads from well below the 60th parallel in Labrador almost to the 80th in northern Greenland, but nevertheless there is much in common across it as regards both physical environment and traditional culture.

I shall take the colour words in Eskimo languages in the order of Berlin & Kay's hierarchy, starting from the most universal opposition of 'white' vs. 'black'. Etymologies will be given where known. Since it is unlikely that such basic lexical items have been diffused across the major branches within the family (in particular between Yupik and Inuit), those forms that appear on both sides of the Yupik/Inuit divide will be taken as original and those limited to a restricted number of dialects as innovations (though this is an artefact, not a hard and fast historic necessity). Note that Eskimo lacks the category of adjective, and most colour terms are stative verbs, in participial form when used attributively.³

In the case of words for 'white', the oldest term in a purely colour sense is probably Proto-Eskimo (PE) **qatər-* 'white or pale' (as in the Comparative Eskimo Dictionary of Fortescue et al. 2010, henceforth CED). It is ubiquitous in Yupik and is used to refer amongst other things to white foxes, polar bears, white clothing, and white-out weather conditions. Within Inuit it is found as a basic colour word in SPI, NAI and Sigliq (WCI) *qatiq-*, but further east it appears to have been replaced as a basic term, mainly by **qakur-* 'be or turn white' (Netsilik *qaquq-*, West Greenlandic *qaqur-*). Both stems exist in most of the languages, **qatər-* or its derivatives being 'light coloured, pale, gray' in most Inuit dialects – in EG *qalir-* is 'colourless, vague, opaque'. Lab *qayiq-* 'be of a fine white colour' and WG *qasir-* 'be gray, dust-coloured' are from the same stem but have apparently been influenced by **qaḍiyyar* 'spotted seal' (of a pale gray colour) – the two may ultimately be related in fact. Note especially the Naukanski (NSY) gloss 'turn pale, bleach' and the extinct Siberian

³ Some forms are actually roots with verbal and nominal derivations. In CAY, for example, *kavir-* 'red', *qiu(g)-/qiu(r)-* 'blue' and *cungag-* 'green' are used attributively in nominalized forms like *kavirliq* 'red (thing)'. In Greenlandic *qursuk* 'green' is nominal, though its cognates in Canada and Alaska (meaning 'yellow') are verbal.

Sirenikski derivative *qatXaX* ‘dehaired and bleached sealskin’, suggestive of a possible ‘sun-bleached’ origin of the term. Also **qakur-* has that meaning in Inuit dialects – it is for instance ‘be bleached by weather, turn white’ in NAI, which also has derivative *qakuak* ‘frost on ground’ (*qakurnaqaq/ qaqurnaqaq* in other dialects). In WG *qaqurtaq* and Polar Eskimo (PEsk) *qakuqtuq* refers specifically to the white whale or beluga. In the Yupik languages **qakur-* is of limited distribution, only remaining in CSY *aXquuxte-* ‘be pale from illness’ (besides CAY derivative *qakurnaqaq* ‘frost on trees’, with *-naqaq* ‘resembling’, as also in Inuit). Only NB-Ai and EG have different innovations, respectively *qaulluq-* (originally ‘shine’) and *agisittuq* (originally ‘reflecting, shining’, e.g. of snow in sunlight).

As regards ‘black’, there are more than one PE stem involved, two of them predominantly found in Yupik, the other in Inuit, but with an overlap. The one that overlaps Yupik and Alaskan Inuit is likely to be the oldest as a colour term, namely **tarər-* ‘(be) dark’, from which Inuit **tarraq* ‘shadow’ is derived. Thus SPI and Nunamiut NAI *taaq-* ‘black’ and derivatives Uummarmiut (Mackenzie Delta NAI) *taaklak*, NSY *tan’ger-*, and CSY *tagner-* ‘black’ (from **tarərənər* ‘darkness, dark thing’), elsewhere simply ‘dark’. The other stem for ‘black’ found in Yupik (CAY and some AAY) is *tungu-* ‘be dark blue (as a ripe berry)’, which in Inuit is ‘bluish, dark’, especially of a dark cloud or a bruise. The source is clearly **tuju* ‘berry juice’, the meaning of the stem as a nominal in Labrador and Greenland. We shall meet it again under ‘blue/green’ below. Inuit has a different basic word for ‘black’, **qirənər-* ‘be black or dark (as a blue fox)’ (only terms referring to the fox itself survive in Yupik). All Inuit dialects have it as ‘black’ and share the association with blue foxes (e.g. NAI *qirniqtaq* ‘black, silver fox’ – in WG also referring to the narwhale). Note also the derivative **qirənəraq* ‘dark ripple on water’. Besides *qirniq-* ‘dark, black’, NAI spoken in the whaling community of Barrow also has *mangaq-*, of obscure origin but apparently the same word as Yupik *mangaq* ‘porpoise’, referring perhaps to the colour of the outer skin of sea mammals.

Words for red are more uniform, but again cut across the Yupik/Inuit divide. The most widespread word is **kavir-*, which in all Yupik plus SPI and NAI is ‘red’, a derivation of which is used in the same area to refer to the (red) fox. By contrast, all the remaining Inuit dialects have derivatives

of **aḍuy* ‘blood’, e.g. Copper *aupayaaq*, NB-Ai *aupaluk* or *aupaq*, WG *aappalaar-* or *aappalug-* (with suffixes meaning ‘looking like’), which looks like the innovation here. Besides *kavite-* from *kavir-*, CSY has *pezirmete-* ‘red, light brown (hair)’, apparently from a Chukchi word referring to (edible) kelp.

When we get to ‘green’, things get more muddled. All dialects have distinct words for ‘yellow’ and ‘green’, but ‘blue’ and ‘green’ are not distinguished in large parts of the Arctic, and are, moreover, entangled with words for ‘yellow’. This should not really be so according to Berlin & Kay’s original hierarchy in so far as having a term for ‘blue’ presupposes having distinct terms for both ‘green’ and ‘yellow’ (though a five term system may either have white, black, red and green or white, black, red and yellow). The lack of words for primary ‘green’ (as opposed to vague, overlapping uses of ‘blue’ and ‘yellow’ terms) is understandable in an Arctic environment. The only area where there is a clear distinction between blue and green in the modern language is Greenland, where primary colours are particularly salient in the coloured beadwork of women’s festival costumes and the brightly painted Scandinavian style wooden houses built throughout the country. Even here, however, there is evidence of earlier confusion amongst the terms concerned, as will be seen.

Let us look more closely at terms for ‘green’. The most widespread (and probably earliest) form here is **cunay-* or **cunAR-*, from **cunA(R)* ‘gall’ – i.e. ‘bile’. This substance may be more familiar to Arctic hunters used to flensing animals than the colour of green foliage, though modern, non-hunting Inuit today may not be so familiar with it. In fact it no longer means ‘green’ at all in Greenland (see under ‘yellow’ below). I shall return to this matter in connection with Chukotian. The stem **cunag* (plain or in extended derivations) is found, usually in the form *sungaaq-*, as far east as Copper (*hungayaaq*), but beyond this *tunguyuq-* is used, whose root **tunju* means ‘berry juice’, as mentioned. We have seen it as ‘black’ in CAY and will see it again as ‘blue’ below. It is also the form used in Uum for ‘blue, green’. In Net it is used side by side with *qirnayuk-* (derived from **qirNƏR-* ‘black’ above with suffix *-yuk* ‘s.th. like’), both terms referring to either blue or green. Generally in ECI *tunguyuqtuq* or *tunguyuqtaq* is either ‘blue’ or ‘green’, though Marc-Antoine Mahieu (pers. comm.) suggests

that in Ungava Tar a distinction can be made between *tunguyurtaq* ‘blue’ and *tunguyuangayuq* ‘green’ (cf. *-anga-* ‘almost’). In Labrador, spoken further south, there is a ‘green’ word distinct from *tunguyuq* (used for ‘blue’), namely *iviuyak*, lit. ‘s.th. like grass’. In West and East Greenland *tunguyuq* is only preserved as ‘blue’, with innovative *qursuk* (**quqcuk-*) from **qurəR* ‘urine’ (root **qurə-* ‘urinate’) plus noun-extending suffix *-suk/yuk* ‘s.th. like’ replacing it in the sense ‘green’. This has spread to PEsk, which preserved the older ‘blue, green’ ambiguity of *tunguyuq-* until recently. Northwest Greenland has *qursurpaluk-*, with an extra suffix meaning ‘look like’, adding to the oddness of the use of this term.

To see what may have happened we need to look at the more widespread sense of the ‘urine’ word **quqcuk-* further west, namely (unsurprisingly) ‘yellow’, the sense found everywhere in the Inuit dialects (it is not attested in Yupik). WG and EG have replaced it in this sense with *sungaar-*, the ‘bile’ word for ‘green’ discussed above – an exception is NWG, where it has further been replaced by *kayur-*, elsewhere the word for ‘brown’. In other words, there has been a flip-flop between the original ‘green’ and ‘yellow’ words. PEsk again reflects the transition, with older *hungaaqpaluk-* alongside newer *qurhuqpaluk-* from WG (*-paluk-* again being ‘look like’). This may be attributable to the colour of bile no longer being so clear in the minds of Greenlanders and the etymological connection between *qursuk* and **qurəR* ‘urine’ no longer being transparent. But perhaps equally importantly, with the movement down the west coast into areas with increasing vegetation, the need to distinguish ‘green’ from ‘blue’ would presumably also have increased, further prompted by influence from Danish. The by now vague ‘green’ term *sungaar-* would have been a natural candidate to fill the ‘yellow’ slot. Bile, note, is by no means cardinal green in colour – the Collins English dictionary describes it as ‘a bitter greenish to golden brown alkaline fluid secreted by the liver and stored in the gall bladder’.

Be this as it may, the use of a ‘urine’ word for ‘yellow’ could well be original in Eskimo, despite the fact that it is not attested in Yupik. Here there are various words meaning ‘yellow’, which may have replaced it, although Nunivak CAY has *civigniq* ‘yellow thing’ from *civigte-* ‘urinate’, with the same association as in Inuit. Other CAY dialects have *esirliq* in

this sense, from *esiq* ‘egg yolk’, while Nunivak has *qapunggalngur* (apparently from *qapuk* ‘foam’, or its derivative *qapugyaq* ‘pumice stone’). NSY has *pežir-*, apparently from a Chukchi word (cf. *lelepera-* below), and CSY has *nirugyuk* from *niruk* ‘light, brightness’ plus *-yuk* ‘s.th. like’ (i.e. sunlight).⁴ All of these could have replaced earlier transparent derivatives of ‘urine’.

We can now proceed to terms for ‘blue’, for which we have seen widespread conflation with those for ‘green’. The only areas where the two are clearly distinguished are, as mentioned, Greenland, but also parts of Alaska. In Greenland *tunguyuq* (the word meaning ‘blue/green’ elsewhere) is now specifically ‘blue’ (note also WG *tunguusaq* ‘violet’ – lit. ‘s.th. like blue’ – and *tunguar-* ‘bluish’). In Alaskan Yupik another ‘blue, black’ berry term is used, namely **qiyu(y)-* ‘blue (esp. of berry)’, which refers unambiguously to a blue colour only in CAY, where *qiu-* (or *qeyu-*) is ‘be discoloured, become blue (e.g. a bruise)’, *qiugliq/qiurliq* is ‘blue thing’, and *qiuq* is ‘blueberry (*Vaccinium uliginosum*), bluish gray rock, bluish reflection in sky from area of open water’. The CAY word for *Aurora borealis* (*qiuryat*) seems to reflect this stem, as discussed further below, suggesting earlier ambiguity between ‘blue’ and ‘green’ for this word also in CAY. There are signs of ambiguity also in AAY, where *qiuq* is apparently simply ‘colour’, and *qiulraaq* is ‘fruit, vegetable’. NSY has besides *sungaryu-* ‘blue, green’ and *qeyur-* ‘be blue’ also nominal *qeyuq* ‘verdure’ and *qeyuaqertaq* ‘green thing’, so both stems are equally ambiguous or vague. In the Inuit dialects this stem (*qisuk-*) refers to dark clouds or vapour (reflected) above the open sea – one of the meanings in St Lawrence Island CSY given above, although it is glossed ‘green’ in mainland Chaplino.

Still further down the Berlin & Kay hierarchy are words for ‘brown’. Most dialects have distinct (if heterogeneous) words for this, as also for ‘gray’. These colours – which MacLaury calls “desaturated” – are particularly troublesome for colour categorization theories, as they refer

⁴ I maintain “r” for uvular /RR/, as in CAY, also for the Siberian languages, for which it is written “gh” in the ANLC orthography (and “ž” – as in some western Inuit dialects – for the retroflex r-like sound written “r”). For proto-forms I use the orthography of the CED. Otherwise I maintain local orthographic conventions, apart from the use of “y” throughout for “j”.

typically to specific kinds of environmental phenomena, often in discontinuous, patchy distribution, and seem to cross-cut other, more saturated “basic” hues (see MacLaury 2007).⁵ The kind of ‘brown’ that is salient in most parts of the Arctic is the reddish-brown colour of certain fur-bearing mammals, and that is indeed the principal meaning of Inuit **kayuq-* ‘reddish brown (animal)’, which may refer specifically to the red fox (*kayuqtuq* – compare *qirniqtaq* the ‘black or silver fox’ from **qirnar-*). From Netsilik and on to the east as far as EG, *kayuq* is ‘red-brown animal’ or, as a verb, ‘be brown’ – apart from NWG, where, as mentioned, it is ‘yellow’ (here ‘brown’ is *sukkulaayusaq* lit. ‘like chocolate’, obviously a very late innovation). Further west, Copper has obscure *marlunga-* (probably related to *marlu* ‘dirty residue left in traditional oil lamp’ further east). NAI has *tingukpalaq-*, lit. ‘(be) like liver’. CAY has *tunguryak* ‘brown, gray thing’ (in Nunivak ‘black thing’) or *nunapigngalnguq* (lit. ‘like the tundra’), apart from Nunivak, which has *qapautngalngur* from *qapaun* ‘brown rock’ of uncertain origin. CSY does not distinguish ‘brown’ from ‘black’ (i.e. *tagneq*, or derivative *tagnemlaaq* ‘darkish or brown thing’). NSY has *tungugžute-/tungungra-*, lit. ‘(be) like liver’, just as in CAY.

Finally, as regards ‘gray’, there is again a rather wide range of words, some referring to ashes – thus CAY *ariryak* (lit. ‘like ash’), Uum *aržalaaq*, Sig *aryaqpuluk* and Net *aržaaluk-* (with various suffixes), all from **arða* ‘ash’ – and some based on stem **əcur-* ‘murky’ (including Net, North and South Baffin, Lab and PEsk). This is the colour associated with certain types of marine mammals in the eastern dialects – *isuqtaq* ‘gray (of young white whale)’ in ECI and Greenland. In WG *isurtaq* refers to the whale itself. Most eastern Canadian Inuit dialects use both the latter and **ciṇaq-* ‘grayish’ (which takes the form *siarnaq* or *sinarnaq* with suffix *-naq* ‘resembling’). This refers more specifically to gray wolves, *singaqti* being attested as a shamanic word for ‘wolf’ in some eastern dialects (perhaps lit. ‘the crusher’). In Greenland a *singarnaq* is a yellowish gray dog – the most wolf-like (also in PEsk). In WG the usual word for ‘gray’ is *qasir-*, mentioned above under **qatər-* ‘white’, undoubtedly a “basic” term by

⁵ He discusses this area in terms of “vantage theory”, whereby the basis of colour categorization is seen to shift in evolutionary terms from focus on similarity (physiologically determined) to focus on differences, more open to cultural skewing.

Berlin & Kay's criteria. In the Copper dialect on the other hand it is expressed by a derivative of **qirṇəR-* 'black', *qirnalaaq-* (the suffix means 'a little'), and in the Baker Lake Caribou dialect by *qiannaqtaq* from **qiðəR-* 'gray hair' (found in the latter meaning in all other dialects, usually as *qiiq*). In CSY and NSY Yupik a Chukchi loanword *siwaaru/siawiaru* is used, though in the former also a derivative of **tarəR* 'dark' is found (*tagnemyugaaq*). Similarly in CAY, where *tunguryak* mentioned above is glossed 'gray thing' as well as 'brown thing'. There are no non-derived terms for the other colours beyond 'brown' on the hierarchy, namely 'purple', 'orange' and 'pink'.

Other colourful expressions to remind us that all dwellers of the Arctic are exposed to a full array of colours – if only fleetingly – are the words for *Aurora borealis* (the 'Northern Lights') and for 'rainbow'.⁶ There are two terms for the former, whereof one is limited to the eastern Arctic: *arsarniq* (or plural *arsarniri(i)t*) and refers to the game of Eskimo football supposed to be taking place amongst dead souls (those who died violent deaths) up in the aurora. The other, more immediately relevant to colour terms, is attested throughout the rest of the Eskimo-speaking Arctic. This is reconstructed as PE **ki(C)uryar* in the CED, which may be related to *ki(C)u-* 'answer', referring to the alleged response of the aurora to calling or whistling. In most Alaskan Yupik dialects it takes the form *qiuryat* (as opposed to *kiuryat* in more peripheral areas), which may be influenced by **qiyu(γ)-* 'blue' discussed above (if not just the result of assimilation at a distance). This would make sense if the original sense of this term was broad 'blue/green' (as the Siberian Yupik forms suggest) as opposed to narrow 'dark blue' (as in the modern language), since the dominant colours in the Northern Lights are in fact pale greenish or yellowish (and occasionally crimson, but certainly not dark blue). Nevertheless, folk etymology may be at play here and the form originally have had initial *q-*.

As regards 'rainbow', the Yupik term is based on **agluR* 'jaw' – CSY and NSY dual *aglu(k)* (also 'arc, crosspiece on skin stretcher, walrus-bone strut for whale boat'), CAY and AAY *agluryaq*. In Inuit, NAI has

⁶ Other colourful phenomena in the Far North include the orange rays of the midnight sun cast across the landscape, the pink 'alpenglow' on mountains and tree tops in mid-winter, or the turquoise cavities in overturned icebergs, but these apparently have no great cultural functionality.

tulim(m)aq (compare *tulima(ž)aq* ‘rib’), and Sig, Cop and Tar have *ayagutaq* (lit. ‘push pole, support for house’). This refers to a partial rainbow in Iglulik according to MacDonald (1998: 159), who has *katauyak*, literally ‘entrance to the igloo’, for a full rainbow extending up from the horizon. WG has *niriusaaq* from **nəryuy-* ‘eagerly expect’.

Most generic words for ‘colour’ in Eskimo languages refer to a painted surface – thus WG *qalipaat* (from **qalir* ‘covering’), NWG *amiut* (from **amir* ‘skin’), and CSY *iqertaq* (from **iqərtə-* ‘skin’). CAY, however, has – besides *minguk* (lit. ‘paint, ointment’) – also *qaskiq* ‘(intensity of) colour’, transferred from another sensory modality, namely **qatə* ‘deep or loud voice’. According to Mahieu (pers. comm.) Tar uses the word *tauttu* (literally ‘appearance’). AAY *qiuq* ‘colour’ was mentioned above under ‘blue’.

I shall have little to say about the colour terms of Aleut, which can hardly be termed an “Arctic” language at all. Suffice it to say that the basic terms are *quma-* ‘white’, related to PE **qəvləR-* ‘glitter’; *qaxchax-* ‘black, dark’; *uluuda-* ‘red’ (and ‘red fox’), Atkan also *chiizana-* ‘red (of blood)’; *chidgi-* ‘blue, green’; *chumnux* ‘yellow, brown’ (also ‘red brown’ and ‘gray’); *ayangi-* ‘gray, foggy, leaden’; Eastern Aleut also has *tudu-* ‘crimson, purple (of sky), reddish blue, brown (eyes or paint)’, which in Atkan is ‘light coloured, light blue or green’.

3. Preliminary discussion of the Eskimo-Aleut terms

While there is no compelling evidence for a single ‘gray’ or ‘brown’ term in PE, there is good reason to think that they are represented by “basic” words (in the sense of “non-derived”) in at least some of the modern languages, as indicated above. There were certainly basic terms for ‘white’ (**qatəR-*, referring among other things to bleached skins), ‘black’ (derivatives of **tarəR* ‘dark’), and ‘red’ (**kavir-*, referring to reddish coloured mammals). Other simple reconstructable colour words in PE can hardly be regarded as “non-derived”, namely ‘green’ (**cunag-*, actually ‘bile-coloured’), perhaps a distinct ‘blue’ word referring to ripe berries (**qiyu(γ)-* or **tuŋu-*), and a ‘yellow’ one referring to urine (**qurcuk*). With their transparent etymologies reflecting natural phenomena – and the widespread use of suffixes meaning ‘look like’ or ‘resembling’ – it is difficult to regard them

and other terms that came to replace them in various dialects as “basic” in the sense originally defined by Berlin & Kay (1969). According to their definition, a basic colour term must consist of only one morpheme (not containing morphemes meaning ‘like’ or ‘X-coloured’), must not be contained within another meaning (like ‘scarlet’ within ‘red’), must not be restricted to a small number of objects (presumably including marine or land animals of a certain colour), and must be common and generally known. None of these except the last is strictly adhered to in the majority of the Eskimo terms we have examined.

On the WALS maps concerning colour terms (132A and B, contributed by Kay & Maffi) it is claimed that Siberian Yupik displays 5 non-derived colour terms. I can discern at most 3 (white, black and red) according to the accepted criteria. The situation is even worse for the eastern Inuit dialects: here ‘red’ is a transparently derived term (= ‘like blood’), so does it only count as having the systematic opposition of ‘black’ vs. ‘white’? This points towards a major problem with colour studies that range over many less familiar languages: the derivational status of many of the terms gathered are not recognized by the researchers citing them. There has been lively debate about what constitutes a “basic” term, but little attention paid to this particular linguistic aspect. One way around this is sketched by Kay & Maffi (2000: 752) in terms of the distinction between “encoding” and “decoding” idioms, but since their relaxation of the criterion would allow through conventionalized encoding idioms of the ‘like X’ kind, it would seem more prudent to consider the relative degree of lexicalization of the expression – that is, if one wants to let through terms like Inuit *aukpaluk-* but not the English phrasal equivalent (‘looks like blood’).

If – to be generous – the array of Eskimo “basic” colours does constitute a 6-term system (as suggested by the second WALS map for CSY) it should contain distinct ‘blue’ and ‘green’ (as well as ‘yellow’), but one or the other appears to be jumped over (as in the majority of Eskimo dialects), since one of the basic terms is a broad ‘blue/green’ one (as also in Aleut). If CSY represents an original 5-term system stopping at ‘green’ and ‘yellow’ on the other hand – corresponding to Kay & Maffi’s (2000) type IV_{G/Bu} – a ‘dark blue’ term based on the colour of ripe berries (**qiyu(g)-*) must have been subsequently added in CAY, leaving the ‘bile’ word as ‘green’. However, in

Inuit a ‘blue’ term *tungu-* based on the colour of ripe berries must also have been added. In Canada this resulted in it either disappearing again (as in Sigliq and Copper) or absorbing the territory of the older ‘green’ term (except in Greenland, where there was a complete reshuffling).⁷ This would have meant a reversion to a 5-term system in most Inuit dialects, something Berlin & Kay specifically rule out – once a new distinction is made, it is not supposed to be lost again. Moreover, the original meaning of the ‘bile’ term was more likely to have been ‘green/yellow’ than ‘green/blue’ (I shall return to this under Chukotian), so the berry-based ‘dark blue’ terms may have been original, alongside the ‘green’ (bile) word, the latter spreading to take over the territory of the former in certain languages and dialects (including CSY). The situation is anomalous, but may nevertheless turn out to characterize fluctuating transitions between 5- and 6- term systems elsewhere (if that is what they are).

4. Chukotian

The four Chukotian languages (more closely related among themselves than the Eskimo languages) are Chukchi, Koryak, Kerek (recently extinct), and Alutor on the Kamchatkan isthmus. I shall ignore Western Itelmen, the surviving Kamchatkan language further to the south, since it has undergone massive lexical influence from both Russian and Koryak. Speakers of Chukchi and Koryak are divided between coastal and inland tundra groups, with the coastal Chukchis in particular sharing much in the way of environment and culture with their Eskimo neighbours, but with the inland people traditionally oriented towards a reindeer-herding nomadic way of life on the high tundra. Alutors share something of both ways of life (and environments). I shall take the Chukotian colour words in the same order as those for Eskimo. The situation will be seen to be very similar, although with a greater variety of ‘brown’ and ‘gray’ terms, attributable to the greater concern of the (inland) Chukotians with reindeer domestication.

⁷ Note that there is no doubt about some languages displaying a single ‘blue/green’ term, as in Kay & Maffi’s type IV above. It is more controversial how the perceptual system handles such “fuzzy set” categories, i.e. whether speakers of languages with such a single term display a double prototype focus, one lying within primary blue, the other within primary ‘green’, for example.

‘White’ is everywhere *ilgə-* ‘white, clean’, referring among other things to white reindeer and the white of dawn.⁸ And ‘black’ is everywhere from **əv-* (Chukchi *uw-*), referring among other things to black reindeer and dark foxes. The principal word for ‘berry’ is derived from this, i.e. **əvənrən* (Chukchi *oonʔəlgən*). Koryak also has *luqi(n)* ‘black, dark.’

Things are a little more complicated with ‘red’, as there is some overlap with ‘yellow’ (via ‘golden’ or ‘copper coloured’). There are two main stems involved, which seem to have become somewhat entangled. The first, **jərrə-*, is the form found in Alutor simply as ‘red’, and is not found in Chukchi. The Koryak cognate *jəccə-* is ‘red’ and *jəcəll’u-* ‘copper-coloured’ (as also Alutor *jərrəʔun* ‘copper’, perhaps a blend with **celgo-*, the other ‘red’ stem). Note also *ceccav-* ‘turn yellow or red (leaves)’ as well as *cge-* (Alutor *sgi-*) ‘turn red’, *jəccəpeja-* ‘pink’ and *(nə)loqececcəpeja-* ‘crimson’ (with *luqi(n)* ‘dark’ and *peja-* ‘appear’) – *(nə)jərrəpita-* is ‘crimson’ in Alutor. Also related are Kerek *(i)ciccə-* ‘red, yellow’ and *siccilru-* ‘turn red, blush’ (cf. nominalization *siccʔənnʔan* ‘salmon’). The second ‘red’ stem, **celgo-*, is reconstructed for Proto-Chukotian as ‘copper-coloured’ (in fact it has been borrowed into CSY Eskimo as *siilu* ‘brass, red copper’). Chukchi has *cetlo-* ‘become red, yellow, copper-coloured’ (reduplicated *cetlocel* is ‘copper’) besides *(nə)celgə-* ‘red’, and Kerek has *ucilə(gəccən)* ‘golden’.

As regards ‘green’, there is, as in Eskimo, minimal distinction from ‘blue’. In Chukchi *(nə)wtecgətrə-* ‘green, light blue’ (also ‘yellow, yellowish green’) is based on *wət(wət)* ‘leaf’ (plus probably *-vərr(ət)-* ‘appear’). The equivalent in Koryak is *(nə)wtelgəja-* ‘green, dark blue’ (in Kurebito 2001 also ‘yellow’) and in Alutor *(nə)wtil’gərrə-*, but both Koryak and Alutor (the Palan dialect) also have *lililta-* ‘green, yellow’ from *lilil* ‘gall/bile’ – in Chukchi *(nə)lil-* is ‘dark blue’ rather. The central role of ‘bile’ here (with its greenish-yellow colour) surely explains the ‘yellow/green’ conflation that has proved so tricky to square with hierarchical colour term theory – explains it more satisfactorily, that is,

⁸ In the Chukotian forms given “g” is a voiced velar fricative, “r” the uvular equivalent, and “r” an alveolar flap or tap; “j” is a palatal approximant (as in the rest of the languages below), and “ng” a velar nasal; “c” is usually a palatal affricate, “ʔ” a glottal stop. An apostrophe indicates palatal quality in Koryak and Alutor.

than Kay & Maffi's (2000: 753-4) explanation in terms of a complex sequence of splits and mergers.⁹ This conflation is also found in Cree further south in the boreal forests of Canada and in most Salishan and Wakashan languages (cf. Kay & Maffi 2000: 753 for Cree, Kinkade 1988 for Salishan, and Fortescue 2007: 350 for Wakashan, where 'bile' is again the source word). 'Bile' might not seem particularly salient as a source for a major colour term from a modern European point of view, but is natural from the perspective of hunter-gatherers of the Far North. Bile is not limited to the gallbladder itself (where it is stored), but colours the contents of the intestinal tract, as visible in the half-digested contents of the stomachs of flensed mammals like reindeer. This is surely an instance of culture and environment overriding purely perceptual salience.

For 'yellow' there is overlap with both 'red' and 'green/blue' words given above. Thus Kurebito has (*nə*)*sello-* (= *cetlo-* above) as 'yellow'. For Chukchi. Žukova and Kurebito have *lelelpera-* 'yellow' rather (from *lilil* 'gall' and *pera-* 'appear'), corresponding to Koryak *lelelpeja-*. However, in Chukchi it can also be glossed as 'fresh green, blue', along with other 'gall/bile' words above, and note also the 'yellow' glosses of (*nə*)*wtecgatrə-* 'green, light blue' already mentioned. Koryak further has *cejpə-* 'turn yellow' (Alutor *siipə-*), which probably go with **celgo-* 'red' above (cf. *jəp-* 'put on'). Finally, Alutor has (*nə*)*qrarrə-* (Palan (*ne*)*qrerrə-*) 'yellow', of unknown origin (but cf. perhaps Chukchi *gre-n* 'whale blubber oil').

To return to 'blue' – beyond the general overlap with 'green' discussed above, there is something more to be said. For 'light blue', besides (*nə*)*wtecgatrə-* above, Chukchi also has *jʔəpera-*, based on *jʔəjeq* 'sky' from **jəra(n)* 'cloud' and corresponding to Alutor (*nə*)*jiṛərrə-*. The Palan dialect has (*nə*)*linglivərrə-* from *lingəl* 'bog whortleberry, bilberry' in this sense. The distinction between light and dark blue may be due to influence from Russian. Žukova & Kurobito have Koryak (*nə*)*wtel'gəj-* as both light and dark blue, as well as green, which may well reflect the earlier situation.

We come now to the murkier colours, brownish through yellowish and grayish, for which Chukotian languages have a good many terms, not

⁹ It is also perhaps relevant that the same substance, grass, is green in the far north only part of the year, yellow for much of the rest.

always easy to distinguish. Many of them are associated with the skin colour of particular reindeer types. For ‘brown’, Chukchi has *pontagəlgən* (= Alutor *puntavrrə-*) from *ponta* ‘liver’, but also *əplələ-* ‘bay-coloured, yellow, grayish’, specifically of a reddish reindeer. This corresponds to Kerek *apli-* ‘gray’ and Kamen Koryak *əplələ-* ‘yellowish’. Žukova & Kurebito have for ‘brown’ *(nə)loqepeja-* in Koryak, from *luqi-* ‘dark’ and *peja-* ‘appear’, and *(nə)wsəng-* in Palan Alutor (= Karagin Koryak *(nə)w-*, *(nə)wsəng-*) from **əv-* ‘black’. For ‘gray’, Chukchi has *cevaro-*, specifically of reindeers, but note that it has been borrowed into CSY Eskimo as *əsravyu* ‘gray dog’ as well as *siwaaru* ‘gray’. Kerek has *sivaaruXuj* ‘gray reindeer’, and Koryak has *ceqən* ‘gray’ (also of a light-coloured or brownish reindeer), which is probably related. Chukchi also has *ʔanargən* ‘gray-black or brownish reindeer’ and *jʔilələ* ‘light gray reindeer’.

In all four languages the *Aurora borealis* is referred to by the same term, Chukchi *jəngettət*, Koryak *jəngatrat*, etc., meaning roughly ‘continually shifting fog’. Words for ‘rainbow’ are more diverse. Chukchi has *terkəqəməl*, lit. ‘marrow of the sun’ (though Radloff reported *celgiajaik*, lit. ‘red cloud’, in the middle of the 19th century). Koryak has *qelpuqel* (Alutor *qalpuqal*), from *qel(pera)-* ‘sparkle, shine’ (as preserved in Chukchi). Kurebito (2001) also has for Koryak *apontake* (or *aponceke* – Žukova has *apponcake*) and *ajəcake* of uncertain origin (though the latter again suggests ‘red’). There are a couple of words for ‘colour’ in general: Chukchi *peragərgən*, the abstract nominal derivation of *pera-* ‘appear’, so literally ‘appearance’, and Koryak has *kalegəjngən* (Alutor *kaligərngən*), from **kæli-* ‘draw’, probably the same as homonym *kæli-* meaning ‘variegated or speckled’ (cf. Kerek *(na)kaali(li)* ‘coloured’).

5. Excursion into Athabaskan (Koyukon)

It is instructive to compare the investigation so far with the very different organisation of colour terms displayed by another neighbouring language, Koyukon. Situated along the forested banks of the Yukon and Koyukuk rivers astride the Arctic Circle, Koyukon is spoken in territory adjacent to that of the Malimiut Inuit. Like other northern Athabaskan languages it is unusual in having core colour terms that constitute a morphologically distinct set of verbal “themes”. They fall into two types, the lighter ones and

the darker or more intense ones. The former are treated as “dimensional” verb themes, with a *le-* “classifier” (actually an old valency marker). There are three main ones: *(la)kk’ut* ‘white, off-white, pale, faded’; *(le)thuh* ‘yellow, brown, orange, tan, olive green’; and *(le)baa* ‘gray, white’.¹⁰

The second type are treated as “stative” verb themes, containing a *de-* prefix and a *de-* classifier. The principal themes are: *(daale)kk’es* ‘red, dark orange, rust-coloured, ruddy’ (cf. *kk’es* ‘alder’, from which a red dye is made), and *(daale)tl’ets* ‘black’ (also ‘dark blue’ – as a noun ‘gall bladder, bile, blackened blood of fish’). There is also less common *(daale)zenh* ‘dark in colour’, referring to a dark shade less dark than *(daale)tl’ets* and usually referring to dark berries or animals of a grayish or blackish colour. Note that this does not exactly correspond to the opposition between “warm” and “cool” colours central to many colour studies (Kay & Maffi 2000: 750), mainly because of the status of ‘blue’ (“warm”, not “cool”). The stems may also be used on their own in apposition to nouns.

Other stems referring to colour in Jetté & Jones (2000) are *tsetl* ‘dark blue, black’, actually ‘be bruised, black and blue from bruising’, *t’aas* ‘black, dark’ (cf. *t’aas* ‘charcoal’), going with the “stative” themes of the second type above. They also have *(daale)t’okk* ‘brown, reddish brown’ of this type. For ‘green’, they give stem *tsuh* ‘yellow or green’, going with the first (“dimensional”) type above (probably a diffusional variant of *thuh* ‘yellow’), adding that it is “seldom used, as the Ten’a are not particular in distinguishing colours, and commonly express a light green as ‘yellow’ and a dark green as ‘black’”. This is perhaps surprising given that unlike in Eskimo-speaking areas there is an abundance of green vegetation (mainly conifers) in Koyukon territory all year round. Trees, in particular the white spruce, are of great importance to Koyukon speakers, especially as a source of heat in winter, but there is apparently no reason to refer to the colour of their needles – which, by the way, are blue-green. One can always talk of ‘that which looks like grass’, which is precisely what the Ahtna term for ‘green’ *tl’ogh k’eltsiini* literally means (Kari 1990: 364). Compare Koyukon *geege kk’aant’aaye* ‘blue’ (lit. ‘like a berry’) with *kk’aant’aay(e)* ‘like, resembling’.

¹⁰ “kk” in Koyukon forms indicates a voiceless uvular stop, “gg” the unaspirated equivalent, and “e” a schwa (as in Eskimo); “ʔ”, “yh” and “nh” are voiceless; apostrophes indicate ejective consonants.

6. Conclusions

Let me sum up the deviations from the expectations of the Berlin & Kay emergence model (and its successors) displayed by the lexical data presented above. Let me state right away that it is not my intention to argue that these deviations undermine the universal relevance of the hierarchical theory of colour terms, only that there are idiosyncratic limitations to that theory which arise when environmental and cultural salience override the inherent partitioning of colour space in the assigning to it of linguistic terms. All the languages looked at above that distinguish ‘yellow’ or ‘green’ (or both) also have “basic” words for ‘red’, and all that have ‘red’ also have ‘black’ and ‘white’, as predicted by the Berlin & Kay hierarchy. Things get more confused beyond that with the introduction of a specific ‘blue’ word. What I am in fact arguing for is a compromise between the universal perceptual approach and the cultural relativity approach advocated by Lucy and others. This meshes well with Davidoff’s (1997) neurological model with separate modules for colour memory as such and for object memory containing colour information: input from both memory sources provide potential input to colour naming. Thus colour terms based on specific object types may predominate for languages low on the Berlin & Kay hierarchy – but are not ruled out for those higher on it either.

As already discussed, the Eskimo terms do by and large fit into the Berlin & Kay frame of things, though there are problematic confluences in the blue/green and yellow/green areas. ‘Green’ is at the heart of the confusion here, as appears to be the case in most languages spoken in the Arctic. Rather than continuing to speculate as to whether individual Eskimo languages constitute genuine 5- or 6-term systems (black-white-red-yellow-green/blue or black-white-red-yellow-green-blue), or somehow fluctuate between the two, it would seem more realistic – and economical – to consider the prototypical exemplars of the colours concerned. The colour of bile for ‘green/yellow’ and the colour of ripe berries for ‘blue/black’ are the most relevant entities here, as is transparent in the etymology of these terms. In fact, this etymological transparency goes further back down the hierarchy, with ‘red’ in many places expressed as ‘like blood’, and ‘yellow’ as ‘like urine’. This of course meshes with the crucial question for the whole Berlin & Kay approach: what exactly is to

be regarded as a “basic” term here? I have suggested above that lexicalization is a more relevant criterion than limitation to a single, opaque morpheme. And lexicalization is a scalar matter – derivational transparency does not suddenly disappear overnight for an entire population. In fact the situation is similar even with Indo-European terms – the “basic” colour words there can also often be traced back to meanings of ‘being like’ a certain natural phenomenon (cf. Buck 1949: 1050-1059, and in greater detail for English, Casson 1997).

A further problem raised by the Eskimo data is that there are “basic” words for ‘brown’ and/or ‘gray’ in some of the languages (basic, that is, in terms of lexicalization rather than monomorphemic status), although conflated terms persist for ‘blue/green’. Again there are likely exemplars of these colours that are salient in an Arctic environment amongst hunters, namely the colour of fur-bearing mammals (terrestrial and marine).

With the Chukotian languages we saw some of the same problems with the hierarchy as in Eskimo, with more or less transparent etymologies (‘like X’) for certain arguably “basic” words. There is also the culturally salient ‘green/yellow’ colour associated with bile, and the general conflation of ‘blue’ with ‘green’. The main difference from Eskimo in the latter respect is the transparent origin of the ‘green/blue’ term from the word for ‘leaf’ in Chukchi and Koryak (part of whose traditional territory lies below or close to the tree line). There is also some overlap between ‘red’ and ‘yellow’, explicable in the etymological link to ‘(surface) copper’. We also saw a great variety of ‘gray’ and ‘brown’ terms, at least one of which (**əplələ-* ‘bay-coloured, yellow, grayish’) is “basic” in the morphologically indivisible sense but refers especially to (one or more) specifically coloured type of reindeer.

As regards Koyukon, it would appear that it qualifies as what Kay & Maffi (2000: 744) call a “non-partition” language, i.e. one where the domain of colour is not successively partitioned into finer and finer distinctions along the lines of the emergent colour hierarchy, but is organized by three basic principles cutting across this, namely the distinction between ‘black’ vs. ‘white’, the natural salience of ‘red’, and the opposition of ‘warm’ (red, orange, yellow) against ‘cool’ (blue, green)

colours. Such languages, Kay & Maffi claim, may return to a “partitioning” strategy after having started out as “non-partitioning.” In Koyukon it is possible that an original ‘warm’ vs. ‘cool’ distinction has evolved to produce more specific words for at least ‘red’, ‘yellow’ and ‘blue’, though this is problematical (especially given the status of the ‘blue’ word, which goes with the “intense”, i.e. “warm” items). Koyukon appears at all events to have followed a somewhat different route than its Eskimo-Aleut neighbours.

What I would like to suggest in conclusion is that the human visual system, which lies at the core of the Berlin & Kay model, represents a solid basis on which all languages must perforce initially build. However, environmental and cultural factors may bias universal expectations, causing speakers to develop and maintain colour terms that reflect the colouring of salient, culturally important phenomena in their environment. What is salient enough to bias the “default” development can vary considerably from culture to culture and from environment to environment, and may be surprising from a Eurocentric point of view. This is essentially Lucy’s (1997) point in expressing scepticism about colour being a true semantic field: linguistic/cultural divisions may obscure the purely physiological anchoring of colour terminology. He emphasizes that one needs to look at whole linguistic systems of colour terms in individual languages in order to see how colour terms are actually deployed in language use. It is also significant that certain colour words in our data refer to the becoming rather than the being of a colour, for example Chukchi *cetlo-*, Koryak *cejpə-* ‘turn yellow’, presumably referring to leaves or grass in the autumn.

What is apparent in all the languages I have looked at here is that the physical environment of the Arctic and adjacent Sub-Arctic in which they are spoken has played a significant role in determining which colours are salient enough to their speakers to warrant expression as “basic” terms. This seems to have overridden at certain points the perceptual basis for colour distinctions common to all human beings. The partitioning of colour space can never be entirely abstracted from environmental salience, it seems to me. But of course to get a better handle on how much is determined by cognition and how much by environment as regards the

particular languages of this study, it remains to examine them more closely from the perceptual side too. The judgements of their speakers as to the “best case” application of their terms to standard colour chips needs to be investigated, as has been done for a wide selection of the world’s languages already.

Abbreviations of languages/dialects

AAY=Alaskan Alutiiq Yupik; Al=Alutor; CAY=Central Alaskan Yupik; Ch=Chukchi; Cop=Copper; CSY=Central Siberian Yupik; ECI=Eastern Canadian Inuit (Inuktitut); EG=East Greenlandic; Kor=Koryak; Lab=Labrador; NAI=North Alaska Inuit (Inupiaq); NB-Ai=North Baffin-Aivilik; Net=Netsilik; NSY=Naukan(ski) Siberian Yupik; NWG=Northwest Greenland; PE=Proto-Eskimo; PEsk=Polar Eskimo; Sig=Sigliq; SPI=Seward Peninsula Inuit; Tar=Tarramiut; Uum=Uummarmiut; WCI=Western Canadian Inuit; WG=West Greenlandic

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