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Temperature Talk:
The Basics Revisited

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Not to mention other sentient beings, all humans (normally) perceive and experience TEMPERATURE – which is not to say that perceptions and experiences of TEMPERATURE distinctions as to degree and/or kind are invariant among humans. Regardless of possible individual or cultural differences, one can **talk** about this domain in **all** human languages and express distinctions of TEMPERATURE perceptions and experiences.

Two major linguistic issues here:

- basic or other TEMP expressions?
- one unitary linguistic domain or several?

Lexicon, BASIC and other

- Are there any/some **basic** TEMP terms?

Basic terms are distinguished from **non-basic** terms in psychological (i), social (ii-iii), and linguistic (iv-viii) respects – in particular, they are:

(i) salient (i.e., spring to mind immediately);
(ii) generally known in the whole speech community (rather than only among experts);
(iii) with their meanings generally agreed on;
(iv) morphologically simple or at any rate non-compositional;
(v) of regular grammar;
(vi) native or at any rate nativised;
(vii) specialised for this particular domain or at any rate, if shared with other domains, primarily used for this domain;
(viii) within this domain none-too-restricted in their application.

- How many basic TEMP terms (2, 3, 4, ...)?
  - Which?

    2: WARM – COLD;

    3: HOT – WARM – COLD;

    4a: HOT - (LUKE) - WARM - (LUKE) - COLD;

    4b: HOT – WARM – COLD – VERY.COLD?

The number of basic TEMPERATURE terms a language can maximally have is probably quite limited – far more limited than, say, that of basic COLOUR terms, and smaller even than that of basic SMELL terms.

But to begin with the bare minimum, are there **1-term** basic systems, with the opposite(s) of the sole basic term complex (including a negator) or metaphorical/metonymic (e.g., based on a noun such as 'fire')?

WARM – not/no longer WARM, or
not/no longer COLD – COLD

Such systems are certainly conceivable – and, though perhaps rare, they're apparently real: see Ewe (Kwa family), as described by Ameka 2010, with the verb *fá* '(become) COLD/COOL' as arguably the only basic TEMP term.

Far more common are 2-term, 3-term, or (two kinds of) 4-term systems – and they probably exhaust the possibilities for the domain of basic TEMPERATURE terms.

- The **2-term** system only distinguishes **WARM** and **COLD**, as an equipollent opposition, or also with WARM as unmarked.
- The **3-term** system dstinguishes **WARM** (pleasant for the human perceiver/ experiencer, unmarked), **COLD** (unpleasantly non-warm, marked relative to WARM), and **HOT** (unpleasantly, even dangerously very-warm, also marked, forming the extreme opposite of COLD).
- The more common kind of **4-term** system adds a neutral term for the absence of either a pleasant or an unpleasant perception/experience of TEMPERATURE, **LUKE**.

  LUKE can probably not be added to equipollent 2-term systems. (Or is this what Turkish does with *ılık*?)

Also, whenever there is LUKE, there is a question of whether it is really genuinely basic, with FOOD and/or WEATHER as its typical applications, and with its application elsewhere often somewhat recherché.

- Less commonly, a **4-term** system arises, not from adding a neutral term, but from elaborating on the unpleasant deviations from warmth and distinguishing between mere non-warm (COLD) and very non-warm (**ICE-COLD**).

Needless to add, none of these system results from a partitioning of an invariant thermometer scale: at the basis of all is human experience of deviation from comfort.

In the domain of temperature, perhaps more so than in those of colour or taste or smell (to mention only some perceptual/experiential ones), it seems that a distinction of basic and non-basic terms is often less than categorical:

- **focal** terms (core basic terms), **relative** terms
- **extended** basic TEMP systems?
  - not-quite-basic-but-not-wholly-non-basic (relative) TEMP terms
    - relative-to-**previous**-state TEMP terms (uni-, bi-directional relative terms)

There may be **extensions** to 2/3/4-term systems which are basic in some respects, such as morphological simplicity, but in particular not in that of being of unrestricted applicability to all (sub-) domains of all three of a/t/pf-TEMPERATURE.

Their meaning is defined relative to the core/focal basic terms, and the semantic themes for such elaborations are probably limited.

a-TEMPERATURE is probably the preferred domain for such extensions (though this may also be culturally variable, depending on climatic conditions at the habitat of a speech community).

For example, German's 4-term core system consisting of *warm*, *kalt*, *heiss*, *lau*, is extended through:

- *kühl* 'more on the COLD than the WARM side, and more or less pleasant depending on the circumstances', and
- *lind* 'more on the WARM than the COLD side, but pleasant by contrast to what was before';

- *schwül* 'sweltering HOT', and
- *klamm* 'immobilisingly COLD' (t/pf-TEMP).

Relative-to-previous-temperature

German *lind* illustrates a theme that has sometimes been highlighted for other languages: **relative** TEMPERATURE terms making reference to a **previous** state.

German *lau* was originally relative, too, implying a unidirectional transition from warm to less warm, the opposite direction as that for *lind*.

It seems decidedly commoner for extensions than for basic terms to be relative in this sense; however, with 'pleasantly warm' at the centre of each basic system, 'no longer warm' is a conceivable opposite number, and basic systems could thus be inherently relative.

Adjectives being static and verbs dynamic, verbal or verb-derived basic TEMP terms are perhaps more conducive to relative-to-previous-state readings.

Cf. Germanic
**kalda-*: participle of strong verb **kal-* 'to freeze, to become cold' (from having been warm previously);
**warma-* always a basic adjective;
**heita-* from IE verb **kai-* 'burn' ('to be alight, shine'?)

Rationale of relative-to-previous-temperature terms: cognitively and culturally natural cycles with unidirectional transitions between states

- cycle of seasons
  winter –> spring –> summer
  COLD –> WARM
  summer –> autumn –> winter
  WARM –> COLD
- lunar cycle
  night –> day
  COLD –> WARM
  day –> night
  WARM –> COLD
- food preparation
  raw –> cooked
  COLD –> WARM
  cooked –> stored
  WARM –> COLD
- deviations from natural state
  normal –> caused deviation –> automatic return to normal
  COLD / WARM –> WARM / COLD –> COLD / WARM

- And the (clearly) **non-basic** TEMP lexicon?
  - complex lexical items (metaphor, metonymy):
    - derivatives (e.g., E *ic-y*, G *eis-ig*)
    - compounds (e.g., E *ice-cold*, G *eis-kalt*)
  - TEMP as secondary sense of morphologically basic terms
    - metaphor
    - metonymy (e.g., 'burning' > 'hot')
  - non-native
  - ...

- Lexical field structure
  - One or two (or more) oppositions?
    (a warmness scale and a coldness scale)
  - Which are the (primary, secondary?) antonyms?
  - Symmetrical or asymmetrical?
    (e.g., in English, the antonym of *warm* is *cold*, but the antonym of *cold* is *hot*)
  - Privative or equipollent?
  - If privative: Which opposite is marked/unmarked?
    (WARM unmarked, being experienced as pleasant under most circumstances?)

- Which **word class(es)**?

•• Basic TEMPERATURE terms can be adjectives, adverbs, verbs, nouns, or ideophones/expressives, thus essentially covering all lexical word classes.
(As to grammatical classes, there are no TEMP classifiers, though, nor is TEMP ever a noun class/gender category: TEMP is touch, but not see, which are the two prerequisites for perceptually-based noun classes.)

•• This **crosslinguistic** variability in word class would seem to fit in with TEMPERATURE being rather variable as to its time-stability, depending on who or what it is attributed to – which distinguishes this domain from many others that are correspondingly less versatile in their word-class affinities.

- **Individual** languages, however, tend to be consistent in the word class of their basic TEMPERATURE terms.

  For example, in the Germanic languages they are typically adjectives, accompanied by a verb such as *frieren* 'to be/feel cold' in German, and the odd ideophone/expressive, such as *brr(r...)* 'I am/feel freezing/ shivering cold' in German again (also English, Swedish, ..., also French, which in addition has *gla-gla* [gla.gla]), which in German happens to be homonymous with the call to draught animals to stop pulling (English *whoa*).

  It is less clear what they are in Romance (nouns?), but whatever they are, they are most of them the same.

Ideophonic/expressive TEMP terms, typically accompanied by gestures, are perhaps very widespread, though rarely codified in dictionaries. TEMP adjectives, nouns, verbs too may have an expressive/iconic motivation: e.g., *kurkur* 'be shivering cold', an unergative verb in Marathi (Indo-Aryan). Such ideophones/ expressives are certainly more common for extreme than for moderate temperatures, and probably more common for COLD than for HOT, though this will depend on climatic conditions. (An example of a HOT expressive is *uff* in Urdu, accompanied by the gesture of wiping sweat off one's brow.)

If basic TEMPERATURE terms are assigned to different word classes in the same language, their distribution will respect time-stability, with those denoting the most time-stable perceptions/experiences being nouns, those denoting the least time-stable perceptions/ experiences being verbs (such as *frieren* in German) or also ideophones, and those in-between being adjectives or adverbs.

- No lexical or grammatical correlates have so far been identified for language-particular word-class preferences.

  Of course if a language has no word class of adjective or adverb in the first place, TEMPERATURE terms can't be of these word classes; and they won't be the only adjectives/adverbs either.

  Perhaps the different perceptual and experiential domains – SIGHT, SOUND, TOUCH, TASTE, SMELL, making up most of what is sometimes known as PROPERTY CONCEPTS – can be expected to roughly harmonise in word class. But then see Romance, where basic TEMPERATURE terms don't quite harmonise with the other lot.

Word-class derivation

German

A	*heiss*	*warm*	*lau*	*kühl*	*kalt*
N	*Hitz-e*	*Wärm-e*	*	*(Kühl-e)*	*Kält-e*
V INCH	*heiss werden*	*warm werden*	*	*(kühl werden)*	*kalt werden*
				ab-kühl-en	*er-kalt-en*
					frier-en
V CAUS	*er-hitz-en*	*(er-)wärm-en*	*	*kühl-en*	**kält-en*
					(ein-/ge-)frier-en
					(cf. N *Frost*)

English

A	*hot*	*warm*	*luke*	*cool*	*cold*
N	*heat*	*warm-th*	*	*cool-ness*	*cold*
				chill	
V INCH	*heat (up)*	*warm (up)*	*	*cool (down)*	**cold*
V CAUS	*heat (up)*	*warm (up)*	*	*cool (down)*	**cold*
					freeze (cf. N *frost*)

Notes:

- transitions always ingressive/prospective rather than egressive/retrospective: focus on resultant rather than previous state
  e.g., *wärm-en*/*warm* 'cause to become warm'/*'cause to cease to be warm'
  (but: *ent-frost-en*/*de-frost* 'cause to cease to be frosty').
- *er-wärm-en* transitive (typically needs causation),
  but *er-kalt-en* intransitive (typically occurs on its own; *sich er-kält-en* 'to catch a cold', with obligatory reflexive).
- irregular allomorphy at HOT (and COOL);
  suppletion at COLD;
  gaps at LUKE (and COLD);
  denominal rather than deadjectival verb at HOT.

DOMAIN(s)

Is TEMPERATURE a **single** unitary domain or **several** different (sub)domains, as far as its linguistic expression is concerned?
(2 [Koptjevskaja-Tamm & Rakhilina], 3 [Plank], ...?)

- on **lexical** grounds (in terms of lexical items, of lexical/word classes)
- on **grammatical** grounds (in terms of the syntax and morphology of constructions)

Actually, as far as the **physiology** of sense perception is concerned, unitariness of domain is perhaps not to be expected.

- different receptors for cold (closer to the surface of the skin) and warm (deeper):
  How are the different sensations unified (if they are)?
  - physiologically, psychologically, linguistically?

- difference needs to be made between (i) thermal sensation through the skin and (ii) temperature regulation of the (human) body:
  - (i) (adaptable) neutral zone (=no thermal sensation) at 31-36°C, with normal skin temperature at 33-34°C
    (ii) comfort zone at 17.5-31°C, depending on habitual temperature

But we are talking about temperature **talk**, not the physics, physiology, psychology, or anthropology of temperature, and the issue of unitariness or separateness is an empirical question to be decided on lexical and grammatical grounds.

My bet: It may really be three (sub)domains (or four?, but not more):

- **atmospheric-TEMPERATURE**, to do with what can be attributed (i) causal agency or (ii) instrumental responsibility for temperature sensation;
- **touch-TEMPERATURE**, as attributed to objects (usually inanimate, or non-sentient) registering temperature differences owing to causal agents or responsible instruments;
- **personal-feeling-TEMPERATURE**, as attributed to sentient beings experiencing temperature differences owing to causal agents or responsible instruments.

When such a three-way distinction is reflected by syntax, **predicative** constructions of terms for a-, t-, and pf-TEMPERATURE typically differ in one way or another in terms of **relational clause structure** (transitivity, valency) and/or **word class**.

Illustrated from German:

a-TEMPERATURE

(i) *Es ist kalt in den Tälern / im Wind*
it is cold (A) in the valleys / in the wind
with the "impersonal" pronoun inomissible even when not in initial position preceding a V2 finite verb, unlike expletive *es*:
In den Tälern / Im Wind ist es kalt
in the valleys / in the wind is it cold

(ii) but also, neutralising the contrast with t-TEMPERATURE:
Die Täler sind kalt / Der Wind ist kalt
the valleys / the wind are / is (3PL/3SG subject agreement) cold (A)

(iii) or, partly neutralising the contrast with pf-TEMPERATURE in word class, if not in construction:
*?Die Täler frieren / *Der Wind friert*
the valleys (NOM) freeze (V) (3PL subject agreement) / *the wind (NOM) freezes (3SG subject agreement)
**Die Täler friert / *Den Wind friert*
the valleys (ACC) freeze (V) (3SG default agreement) / the wind (ACC) freezes (3SG default agreement)
Es friert in den Tälern / im Wind
it freezes (V) in the valleys / in the wind

t-TEMPERATURE

(i) *Die Steine sind kalt*
the stones (NOM) are (3PL subject agreement) cold (A)

pf-TEMPERATURE

(i) *Den Kindern ist kalt*
the children (DAT) is (3SG default agreement) cold (A)

(ii) *Die Kinder frieren*
the children (NOM) freeze (V) (3PL subject agreement)
Die Kinder friert
the children (ACC) freeze (V) (3SG default agreement)
all meaning 'The children feel cold'

(iii) *Brrr*.
'I'm shivering cold' (from the cold atmosphere, or also from being in contact with a cold object) (Ideophone)

Attributive constructions tend to admit **basic** terms only for a-TEMPERATURE and t-TEMPERATURE, and/or to require **more coding effort** for pf-TEMPERATURE:

a-TEMPERATURE: *die kalten Täler/ Winde*
the cold (A) valleys / winds
t-TEMPERATURE: *die kalten Steine*
the cold (A) stones
pf-TEMPERATURE: **die kalten Kinder*
the cold children
die frierenden Kinder;
the freezing (V PRTCPL) children
die sich kalt fühlenden Kinder
the REFL cold feeling (V PRTCPL) children

Following from the basicness criterion of none-too-restrictedness in their application (viii), truly basic TEMPERATURE terms ought to be applicable in all three subdomains, a-TEMP, t-TEMP, and pf-TEMP.

This is what they often do, though probably not always, giving linguistic unity to the perceptual/experiential domain of TEMPERATURE.

However, as just seen in the illustration from German, there are terms which are pretty basic on virtually all other grounds, except that they do not equally cover all three TEMPERATURE subdomains:

- the verb *frieren* only covers a- and pf-TEMP, but not t-TEMP;
- the ideophone *brrr* only covers pf-TEMP.

In Dravidian, it is common to have different terms for a-TEMP on the one hand and t-/pf-TEMP on the other.

Distributions of terms with a- and t- TEMP in contradistinction to pf-TEMP seem less common – although an example was seen above where a difference in syntactic **constructions** is so distributed, with adjectives in only a personal construction for a- and t-TEMP and in only an impersonal construction for pf-TEMP in German.

An adjective such as *kalt* in German does cover all three domains, which renders it impeccably basic, and thus provides support for the claim that **all** languages have some truly **basic** TEMPERATURE terms.

Dravidian is problematic for this strong universalist claim insofar as among its relatively most basic terms for TEMPERATURE none extend beyond either a- or t/pf-TEMP, and thus are not as unrestricted as their basic counterparts are elsewhere.

Terms which are **non-basic**, or **not-so-basic**, also on other grounds tend to have their applicability limited not only to a-, or t-, or pf-TEMP, but in fact even further, namely to **sub(sub)classes of nominal referents** such as these – to list only those which were here or there found to matter in a questionnaire study:

a-TEMPERATURE

WEATHER CONDITIONS (causal agents)

- weather
- sun
- air, wind
- rain, snow
- ...

TIME PERIODS

- day, night
- summer, winter
- ...

ENVIRONMENT (responsible instruments)

- desert
- forest [or INDOORS?]
- lake, river
- ...

INDOORS

- house, hut, tent
- room
- stove, oven, heating [or also t-TEMPERATURE?]
- fridge
- ...

CLOTHES and (artificial or natural) COVERS

- coat, shoes, hat
- silk, linen
- blanket
- ...
- skin, scales, fur
- ...

t-TEMPERATURE

SUBSTANCES (non-sentient)

- solid
- liquid
- gaseous

FOOD

- eatable
- drinkable
- ...

BODIES and their PARTS (with COVERING PARTS also a-TEMP)

- body
- forehead
- hands, toes
- blood
- ...

pf-TEMPERATURE (sentient)

PERSONS (and perhaps other living things ascribed feelings)

Whatchamacallit?

When there is a **generic** native **name** for the domain of TEMPERATURE, provided there is such a unitary domain, its source, as one expects, tends to be the **unmarked** (?) member of the core opposition:

WARM; thus, 'warmth' etc.

Another possibility is to **combine** basic terms, giving WARM-COLD (as in Basque), or of course to **borrow** *temperature* from a major European language, thus ultimately from a Latin deverbal noun based on *temperāre* 'to divide, distribute, mix duly, temper', itself denominal from *tempus* 'division in space or time'.

Grammar

- What is the morphosyntax of constructions with TEMP terms?
  - unitary or diverse within a language, across languages?
- Is TEMP morphosyntax dedicatedly special?

  Hardly. TEMP is not grammaticalised in the sense of having special word classes, phrase classes, construction classes, special morphological categories, or special rules or constraints of syntax, morphology, or phonology devoted to it and only it.

  What else is it identical/similar to?

  Perhaps to the grammar of perception (smell, taste, touch) and pain sensation?

A semantically motivated **syntactic** rule making reference to TEMPERATURE, among other subcategories of property concepts: unmarked relative ordering of stacked adjectives?

e.g., English:
a nice small new cool dark wooden hut
VALUE – SIZE – AGE – TEMPERATURE – COLOUR – MATERIAL – N

Whatever the precise nature of the semantic factor(s) determining the ordering of a property terms closer to or more distant from the noun (time-stability, scope, nouniness), it should follow that TEMP is intermediate on any such ranking. Rules of word order, therefore, won't need to specifically refer to the particular semantic subcategories involved.

Typology

- What about the lexicon and grammar of TEMP expressions is variable and invariable, common or rare across languages?

  [implicitly dealt with throughout this entire paper]

- What, if anything, does crosslinguistic TEMP variation co-vary with, linguistic (e.g., A or non-A languages) or otherwise (e.g., climates, habitats, technologies of speech communities)?

  [For instance: Would it improve the chances of *warm*, rather than *hot*, becoming the primary antonym of *cold* in English if British plumbing were to discover to secret of how to mix hot and cold tap water?]

Diachrony

- What about the lexicon and grammar of TEMP expressions is **stable** and **unstable** over generational history?

Basic TEMPERATURE terms are unusually **pertinacious**. Typically, they are passed on essentially unchanged and with essentially no vocabulary turn-over across hundreds of generations of grammar&lexicon acquirers for thousands of years.

> The Holman et al. 2008 stability ranking of the Swadesh-100 list has COLD in position 81, stability value 16.6, HOT in position 91, stab value 11.6; for comparison, top of the list is LOUSE, stab value 42.8, bottom is SMALL, stab value 6.3. No TEMP term has made it onto the Dolgopolsky 1986 list of 23 most stable lexical items.
>
> If valid (?), **why** such differences in stability?

Just for interest ...

Rank	# In list	Meaning	Stability
1	22	*louse	42.8
2	12	*two	39.8
3	75	*water	37.4
4	39	*ear	37.2
5	61	*die	36.3
6	1	*I	35.9
7	53	*liver	35.7
8	40	*eye	35.4
9	48	*hand	34.9
10	58	*hear	33.8
11	23	*tree	33.6
12	19	*fish	33.4
13	100	*name	32.4
14	77	*stone	32.1
15	43	*tooth	30.7
16	51	*breasts	30.7
17	2	*you	30.6
18	85	*path	30.2
19	31	*bone	30.1
20	44	*tongue	30.1
21	28	*skin	29.6
22	92	*night	29.6

23	25	*leaf	29.4
24	76	rain	29.3
25	62	kill	29.2
26	30	*blood	29.0
27	34	*horn	28.8
28	18	*person	28.7
29	47	*knee	28.0
30	11	*one	27.4
31	41	*nose	27.3
32	95	*full	26.9
33	66	*come	26.8
34	74	*star	26.6
35	86	*mountain	26.2
36	82	*fire	25.7
37	3	*we	25.4
38	54	*drink	25.0
39	57	*see	24.7
40	27	bark	24.5
41	96	*new	24.3
42	21	*dog	24.2
43	72	*sun	24.2
44	64	fly	24.1
45	32	grease	23.4
46	73	moon	23.4
47	70	give	23.3
48	52	heart	23.2
49	36	feather	23.1
50	90	white	22.7

51	89	yellow	22.5
52	20	bird	21.8
53	38	head	21.7
54	79	earth	21.7
55	46	foot	21.6
56	91	black	21.6
57	42	mouth	21.5
58	88	green	21.1
59	60	sleep	21.0
60	7	what	20.7
61	26	root	20.5
62	45	claw	20.5
63	56	bite	20.5
64	83	ash	20.3
65	87	red	20.2
66	55	eat	20.0
67	33	egg	19.8
68	6	who	19.0
69	99	dry	18.9
70	37	hair	18.6
71	81	smoke	18.5
72	8	not	18.3
73	4	this	18.2
74	24	seed	18.2
75	16	woman	17.9
76	98	round	17.9
77	14	long	17.4
78	69	stand	17.1

79	97	good	16.9
80	17	man	16.7
81	94	cold	16.6
82	29	flesh	16.4
83	50	neck	16.0
84	71	say	16.0
85	84	burn	15.5
86	35	tail	14.9
87	78	sand	14.9
88	5	that	14.7
89	65	walk	14.4
90	68	sit	14.3
91	10	many	14.2
92	9	all	14.1
93	59	know	14.1
94	80	cloud	13.9
95	63	swim	13.6
96	49	belly	13.5
97	13	big	13.4
98	93	hot	11.6
99	67	lie	11.2
100	15	small	6.3

Dolgopolsky 1986 has an even shorter list of 23 "most stable" lexical items (arrived at less systematically, on impressionistic Eurasian evidence):

> ‘I/me’, ‘two/pair’, ‘thou/thee’, ‘who/what’, ‘tongue’, ‘name’, ‘eye’, ‘heart’, ‘tooth’, ‘no/not’, ‘fingernail/toenail’, ‘louse/nit’, ‘tear(drop)’, ‘water’, ‘dead’, ‘hand’, ‘night’, ‘blood’, ‘horn’, ‘full’, ‘sun’, ‘ear’, ‘salt’.

Notice that there at least two adjectives, but not a single verb on this list! Notice the scarcity of adjectives and verbs in the top region of the Holman et al. 2008 ranking, too. This suggests the question: Is **word class** a relevant factor in lexical time stability?

Among the 15 adjectives on the Swadesh-100 list, 5 are COLOUR terms and 4 are SIZE/DIMENSION terms; although none of them made it onto the 40-list of Holman et al. 2008, the question here is whether **semantic field** is a relevant factor in lexical pertinacity. For example, are basic NUMERALS ever replaced by native words? (They not infrequently are replaced by loans.)

This line of research raises several questions, all unanswered or indeed unasked:

(i) **Why** are some words (or word classes), or their meanings and/or forms, more stable than others? (Because they are culturally neutral, culturally salient, hence very frequent, early learnt, never forgotten, never abandoned in favour of more exciting alternatives? Still, why should 'louse' be so stable and 'small' be so comparatively unstable?)

(ii) Stability is seen as a matter of resistance to **replacement** (by a lexical item from the same language, or also by loans). But what about stability in terms of resistance to (a) **semantic change** and (b) **phonological change**? (For it may also be due to semantic and/or phonological change that cognates are no longer recognisable as such. Or also that items which are not cognates come to sound and mean like they are.)

Which is more stable, **meaning** or **sound**? Probable answer: Meaning, at least in certain semantic domains (such as numbers, body parts, kin relations ... – that is, in well-structured lexical fields).

- How and why can it change?

  •• Semantic **re-analysis** of terms: Where do TEMP terms come from?

    ••• Preferences of or constraints on re-analysis?
    (Like: Re-analysis of X as Y only if Z exists/doesn't exist)

The **sources** of basic terms, for TEMPERATURE as for any other domain, are **non-basic** terms (including terms that are basic for another domain) or **borrowing** (and nativisation).

The members of 2- or 3-term systems tend not to be borrowed, but to be recruited from non-basic terms turned basic (a long time ago).

The natural sources for basicification are non-basic extensions to 2/3/4-term systems, in turn naturally deriving from salient expressions within the subdomains they are limited to. Bodily reactions to TEMPERATURE perceptions/experiences, or also of emotions associated with them (e.g., COLD ≈ FEAR, both making you shiver), are among the most productive sources.

While **semantic reanalyses** are rare once a TEMPERATURE term has become basic, one has to be specially licensed, however:

> A neutral term LUKE typically seems to come about through the reanalysis of a term for WARM, never for COLD, initially denoting a change in temperature from WARM to COLD or a coexistence of WARM in some (sheltered) place and COLD in its environment.

Examples:

(i) English *tepid* and its Romance equivalents vis-à-vis Latin *tép-* WARM, Sanskrit *tápas* 'heat';

(ii) German *lau*, English *luke*, Swedish *ljum* etc., vis-à-vis Modern Icelandic *hly-* WARM, Old English *gehléow* WARM, *un-hléow* COLD < Gmc **hléwa-*, **hléwia-*, IE **kleu-*, **kel-* 'burn, glow', cf. Latin *cal-* WARM, 'glow';

(iii) Swedish *sval*, Modern Icelandic *sval-ur* ‘cool[ing], mild’, probably LUKE vis-à-vis Old Norse *svelta*, Old English *sweltan* ‘to die, perish [typically of exposure, heat, or cold (?)]’, the source also of English *sweltering*/*sultry* ‘oppressively HOT’.

- Marginalisation/replacement of terms (by native/non-native competitor):
  Where do TEMP terms go to (if they don't pertinaciously stay)?
  - Preferences of or constraints on marginalisation/replacement? (Like: Marginalisation/replacement of X as Y only if Z exists/doesn't exist)

•• Restructuring of oppositional relations

••• Preferences and constraints?

example of a restructuring:

Germanic COLD – WARM as core antonyms, with 'hot' as VERY.WARM,
> English COLD – HOT, with 'warm' as LESS.THAN.HOT, with the lexical items as such all retained.