Temperature Talk: The Basics

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1. 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.

2. More specifically, for distinguishing perceptions/experiences of TEMPERATURE, human languages tend to have **basic** terms; perhaps **all** languages have such basic TEMPERATURE 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 nativized; (vii) specialized for this particular domain or at any rate, if shared with other domains, primarily used for this domain; and (viii) within this domain none-too-restricted in their application.

3. Basic TEMPERATURE terms can be adjectives, adverbs, verbs, or nouns, or also ideophones, thus essentially covering all lexical word 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, usually accompanied by a verb such as *frieren* 'to be/feel cold' in German, and the odd ideophone, such as *brr* 'I am/feel freezing cold' in German again, homonymous

with the call to draught animals to stop pulling. It is less clear what they are in Romance, but whatever they are, they are most of them the same. 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 such language-particular word-class preferences. Well, 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 what is sometimes known as PROPERTY CONCEPTS — ought to roughly harmonize in word class? But see Romance, where basic TEMPERATURE terms don't quite harmonize with the other lot.

4. Actually, the perceptual/experiential domain of TEMPERATURE is really three domains: **touch-TEMPERATURE**, **atmospheric-TEMPERATURE**, and **personal-feeling-TEMPERATURE**. At least this is what is typically suggested by the grammar and lexicon of TEMPERATURE — which is what is at issue here, not the physics, physiology, psychology, or anthropology of temperature.

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

This can be illustrated from German:

t-TEMPERATURE: (i) *Die Steine sind kalt*
the stones (NOM) are (3PL subject agreement) cold (ADJ)

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

in the valleys is it cold)

(ii) but also, neutralizing the contrast with t-TEMPERATURE:
Die Täler sind kalt
the valleys are (3PL subject agreement) cold (ADJ)

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

pf-TEMPERATURE: (i) *Den Kindern ist kalt*
the children (DAT) is (3SG default agreement) cold (ADJ)

(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'

Attributive constructions tend to admit basic terms only for t-TEMPERATURE and a-TEMPERATURE, and/or to require more coding effort for pf-TEMPERATURE; cf. again German:

t-TEMPERATURE: *die kalten Steine*
the cold stones

a-TEMPERATURE: *die kalten Täler*
the cold valleys

pf-TEMPERATURE: **die kalten Kinder*
the cold children
die frierenden Kinder; *die sich kalt fühlenden Kinder*
the freezing children; the REFL cold feeling children

5. Following from the basicness criterion of none-too-restrictedness in their application (viii), truly basic TEMPERATURE terms ought to be applicable to all three, t-TEMPERATURE, a-TEMPERATURE, and pf-TEMPERATURE, in predicative constructions. This is what they typically do, giving 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 domains: the verb *frieren* only covers pf- and a-TEMPERATURE, but not t-TEMPERATURE. In Dravidian, it is common to have different terms for a-TEMPERATURE on the one hand and t-/pf-TEMPERATURE on the other. Distributions of terms with t- and a-TEMPERATURE in contradistinction to pf-TEMPERATURE 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 t- and a-TEMPERATURE and in only an impersonal construction for pf-TEMPERATURE 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 **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-TEMPERATURE, and thus are not as unrestricted as their basic counterparts are elsewhere.

6. Terms which are non-basic, or not-so-basic, also on other grounds tend to have their applicability limited not only to t-, or a-, or pf-TEMPERATURE, 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:

t-TEMPERATURE

- SUBSTANCES
  - solid
  - liquid
  - gaseous
- FOOD
  - eatable
  - drinkable
  - ...
- BODIES and their PARTS (with COVERING PARTS also a-TEMPERATURE)

body
forehead
hands, toes
blood
...

a-TEMPERATURE

WEATHER CONDITIONS
weather
sun
air, wind
rain, snow
...

TIME PERIODS
day, night
summer, winter
...

ENVIRONMENT
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
...

pf-TEMPERATURE

PERSONS (and perhaps other living things ascribed feelings)

7. 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. Probably there are only 2-term, 3-term, or (two kinds of) 4-term systems 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 distinguishes **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 opposite of COLD in terms of extremes).

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 pleasure.

8. When there is a generic native **name** for the domain of TEMPERATURE, 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 Latin *temper re* 'to divide, ditribute, mix duly, temper', *tempus* 'division in space or time'.

9. 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 t/a/pf-TEMPERATURE. Their meaning is defined relative to the core basic terms, and the semantic themes for such elaborations are probably limited. a-TEMPERATURE is probably the preferred domain for such extensions. For example, German's 4-term system consisting of *warm*, *kalt*, *heiss*, *lau*, is extended through *kühl* 'more on the COLD than the WARM side, but pleasant in 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* 'immobilizingly COLD' (t/pf-TEMPERATURE).

10. *Lind* illustrates a theme that has sometimes been highlighted for other languages: **relative** TEMPERATURE terms, making reference to a previous perception/experience. As will be seen presently, *lau* was originally relative, too, implying a 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.

11. 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 nativization). 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.

12. 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.

13. While **semantic reanalyses** are rare once a TEMPERATURE term has become basic, one has to be 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 are: (i) English *tepid* and its Romance equivalents vis-à-vis Latin *tēp-* WARM, Sanskrit *tāpas* 'heat'; (ii) German *lau*, English *luke*, Swedish *ljum* etc., vis-à-vis Modern Icelandic *hlý-* WARM, Old English *gehlēow* WARM, *un-hlēow* COLD < Gmc **hlēwa-*, **hlēwia-*, 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 (?)]', source also of English *sweltering/sultry* 'oppressively HOT'.

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