CHAPTER 6 -- APPLICATIONS IN NATURAL LANGUAGE PROCESSING

6.1. Metaphors and Natural Language Processing

Natural language processing (NLP) systems have made considerable progress for handling the semantics of sentence-level structure, some also operating on broader levels to relate each sentence to others about it to better determine context (see Raskin 1983). However, almost all of these systems deal only with "literal meanings" of words in their lexicons and do not tackle metaphors. A multi-disciplinary approach to metaphors might be established as follows, through an NLP-like algorithm:

Data-base step 1: record and chart metaphors to determine: a) what sub-categories are; b) what falls within each sub-category; c) what is excluded from all categories; and d) degrees of markedness;

Data-base step 2: determine other relevant fields;

Data-base step 3: contrast and augment categories with data from other fields;

Analysis step 0: determine whether a metaphor is involved;

Analysis step 1: specify type of metaphor;

Analysis step 2: contrast and compare data from more than one data-base;
Analysis step 3: examine against context of surrounding sentences to determine relation of markedness.

I must add that I am not suggesting that this algorithm is -- or even reflects -- the human cognitive process for such metaphors. This algorithm is solely meant for natural language processing, which I see as necessarily having to operate by different, separate structures than human mental processing.

Let us now apply this to the sentences "King Richard was a lion," and "The violin gave a sour sound." First, for "King Richard was a lion": The metaphor in this sentence lies with the descriptors for the word "lion" and their relationships to the adjectives describing "King Richard" (this can be determined in part syntactically) rather than "King Richard" (see Chapter 2). We must first determine what words are being used metaphorically here. There is no entry in Webster for "King Richard"; however, since "King Richard" is a man's name, "king", "lion", and "man" gives us:

king \'kn\ n [ME, fr. OE cyning; akin to OHG kuning] king, OE cyn kin) often attrib la: a male monarch of a major territorial unit; esp : one who inherits his position and rules for life lb: a paramount chief cap 2: GOD, CHRIST 3: one that holds a preeminent position; esp : a chief among competitors 4: the principal piece in a set of chessmen 5: a playing card that is marked with a stylized figure of a king 6: a checker that has been crowned

li.on \'li-\*-n\ \'li-\*-n*\s\ \'li-\*-n-.li-k\ n or lions or lion [ME, fr. OF, fr. L leon-, leo, fr. Gk leo-n]
pl  pl  1a: a large carnivorous chiefly nocturnal cat (*Felis leo*) of open or rocky areas of Africa and esp. formerly southern Asia that has a tawny body with a tufted tail and a shaggy blackish or dark brown mane in the male 1b: any of several large wildcats; esp : COUGAR 2a: a person felt to resemble a lion (as in courage or ferocity) 2b: a person of outstanding interest or importance cap 3: a member of one of the major service clubs - li.on.ess n

1. man \'man, in compounds .man or m*\ n \'men, in compounds .men or m*\ n or men [ME, fr. OE; akin to OHG man man, Skt manu] pl 1a1: a human being; esp : an adult male human 1a2: HUSBAND 1b: the human race: MANKIND 1c: a bipedal primate mammal (*Homo sapiens*) that is anatomically related to the great apes but distinguished esp. by notable development of the brain with a resultant capacity for articulate speech and abstract reasoning, is usu. held to form a variable number of freely interbreeding races, and is the sole recent representative of a natural family (*Hominidae*); broadly: any living or extinct member of this family 1d1: one possessing in high degree the qualities considered distinctive of manhood obs 1d2: MANLINESS 1e: FELLOW, CHAP - used as a mode of familiar address 2a: a liege man : VASSAL 2b: an adult male servant pl 2c: the working force as distinguished from the employer and usu. the management 3a: INDIVIDUAL, PERSON 3b: ANYONE 4: one of the pieces with which various games (as chess) are played Christian Science 5: the compound idea of infinite Spirit : the spiritual image and likeness of God : the full representation of Mind : UNANIMOUSLY : without exception - as one man

The Purdue NLP Lab's SMEARR (see Raskin et al. 1994) holds no entry for "king", but does have "man" and "lion":

```
man.ilt
(ref: "Lyons 1981, 154")
(def: "MAN [[Human], [Non-Female], [Adult]]")
(lost-info: )
(opinion: )

(man
```
(isa human)
(sbw world)
(gender male)
(age 0)
(syn man gentleman)

lion.ilt
(ref: "Wierzbicka 1985, 246")
(def: "a kind of animal")
(lost-info: )
(opinion: "see above reference for detailed description")

(lion
(isa cat)
(sbw world)
(consists-of mane?)
(subject-of stalk hunt kill)
(object-of tame?)
(part-of pride) ;as in a 'pride' of lions (perhaps should be
(size size-set ) ;called pride2)
(shape shape-set )
(color color-set )
(mass mass-set )
(syn none))

Keying to the three-way overlap between the definitions in "Webster", or removing that which is irrelevant to all three, we are left with:

king 1a: a male monarch of a major territorial unit;
esp: one who inherits his position and rules for life
1b: a paramount chief cap 3: one that holds a preeminent position; esp: a chief among competitors

lion 2a: a person felt to resemble a lion (as in courage or ferocity) 2b: a person of outstanding interest or importance cap 3: a member of one of the major service clubs

man 1a1: a human being; esp : an adult male human 11c: a bipedal primate mammal (Homo sapiens) that is anatomically related to the great apes but distin-
guished esp. by notable development of the brain with a resultant capacity for articulate speech and abstract reasoning, is usu. held to form a variable number of freely interbreeding races, and is the sole recent representative of a natural family (Hominidae); broadly: any living or extinct member of this family 1d1: one possessing in high degree the qualities considered distinctive of manhood 3a: INDIVIDUAL, PERSON

The key to this step in this algorithm is that metaphorical usages of words should be marked as such in their entry in the lexicon. For these three entries, those remaining entries of "lion" should initially have all been marked as "metaphorical". Of course, this could also be handled by having only "literal" meaning in the initial basic lexicon, and a routine that says "IF not found, GOTO Metaphor routine."

The analysis algorithm has now scanned through the lexical entries, extracted the relevant entries, and notes that amongst those entries is at least one marker for "metaphorical". This marker will pop the algorithm out its other NLP routines and into the metaphor analysis routine. The next step will then be to determine what type of metaphor is involved. This is another key thing to the process: different types of metaphors must be handled in different ways. A metaphor involving folk-beliefs about animals cannot be handled through the same data-base rubrics as a metaphor involving, say, color or taste, although there may be overlap between data-bases. Since "lion" holds the metaphor here, the clue should be found back in the initial, entire
entry for "lion". There we find in the non-"metaphorical" sub-entries in "Webster" references to "cat", which, in the "Semantic dictionary" given above, such as would be employed by our NLP computer, is subsumed under "animal". We can use these "higher"-level terms to help us choose which database(s) to select: here we have "def: 'a kind of animal'" and "isa ["is a type of"] cat" (from "lion") being applied to "def: 'MAN {[Human], [Non-Female], [Adult]}" and "isa human" ("king" might also be used, but would probably bring us to "isa human" on this level, too). We then run these "marker" words against the "index" words for data-bases for a match, and find that they both match to "Folk Classifications: Animals".

Let us now step aside to look at how these data-bases are constructed. Metaphors of a certain type, such as "folk classification: animal" or "synaesthetic metaphors" are (previously) recorded and tabulated to see what items (such as animals) are included, at what frequency, what other items are they related to, and how "marked" they are in relation to other items. For example, "lion" is fairly common in Euro-American English folk-classification of animals; it is most often associated with humans and with other types of felines; such usage is very unmarked. "Manta ray" is quite uncommon to the same culture group, and could perhaps not even be included; it is rarely related to anything and highly marked. "Sulfur" does not belong. As to
markedness, remember that unmarked becomes marked in a marked context (see Chapter 5.1).

The data provided from tabulating the metaphors collected should be compared to and adjusted by data available from relevant fields of study. For "Folk Classification: Animals", most additional information will probably come from anthropology, some might also be provided by psychology; biology will give information on the contrast between what all animals are available to be known and which are classified, and also how frequent or/and marked encounters with specific animals are for a given culture group. For synaesthetic metaphors, additional information might come from biology, which would tell us means and ranges of human perceptual modes, and neurology, which would allow us to contrast and compare the use of synaesthetic metaphors in language with the level and type of physiological synaesthetic experiences. These tables are highly language and culture specific, varying drastically from culture to culture.

An argument might arise here that these data-bases would have to be infinite, as per Bloomfield's approach (Bloomfield 1935). To this I reply that they would indeed have to be very large, but not infinite: the number of animals in our English folk-classification system is enormous, but finite, and those outside of it are unknown or/and irrelevant. Likewise, towards synaesthetic metaphors, the range of light that humans can see, for example, is finite,
as are the gradations between wave-lengths; furthermore, although we can discern thousands of colors, we bunch them into sets numbering only around 30 or 40 in number, and these sets, in turn, are clumped again (see Ackerman 1990). The knowledge in these data-bases could even be grossly "inaccurate", as per a language-user's knowledge of the world -- for example the difference between a certain culture's folk classification of animals and the world-wide academic community's (zoology departments') classifications.

Returning to the analysis of "King Richard was a lion", the next step is to compare and contrast the information retrieved if more than one metaphor data-base was accessed, perhaps trying to match toward exclusion of all that which does not match, or just combining all information. The final step would be to re-assess the context of the sentences around the metaphor, to determine how and to what extent the context and the metaphor are marked. It is quite a different thing to say "King John was a lion" if you are speaking in the context of irony.

Let us look at this again with "The violin gave a sour sound". Synaesthetic metaphors have been tabulated towards determining their relationships with various items and relational levels of markedness. This table has been additionally shaped by information from such fields as biology, neurology, psychology, and anthropology. The table becomes a data-base, ready to be used towards supplementing informa-
tion towards explaining the meanings of metaphors. Syntactically, we can determine that "sour" holds the metaphor; "sour" and "sound" are scanned and compared in the lexicon for matches, the choices for "sound" being modified by "violin"; no non-metaphorical match is found, and the process jumps to the metaphor analysis algorithm. Rescanning the lexical entries indicates that two differing sensory perceptions are involved, and the "Synaesthetic Metaphor" data-base is accessed. This data-base informs as to various metaphorical meanings of "sour" in relation to "sound", including how and when a sour sound is pleasant or unpleasant, indicates that "a sour sound" is a common synaesthetic metaphor, and is unmarked. "Sour" and "sound" might also have called up the "Folk Classification: Music" data-base, where we are informed, say, that "a sour sound" pertains to certain sequences of overtones. No other sentences are provided, so it is assumed that the surrounding context is unmarked.

6.2. Applications Employing Results from this Research on Synaesthetic Metaphors

Towards natural language processing, I see the results of my research being used as follows:

In trying to obtain the semantic meaning of a phrase such as "a sweet song", "song" does not change in its meaning and thus does not need additions to its listing in the
lexicon. Rather, it is "sweet" which has a literal meaning and various metaphorical meanings.

When the computer comes to work out the meaning of "a sweet song", after having looked over and stored the entry for "song" it would then look over the entry for "sweet -- literal" (or, since it might have, say, three or four "literal" definitions, "sweet set one"), attempting to find matches with aspects of the noun down to a certain specified degree. If matches cannot be made to the degree desired, then the program would decree "sweet" to be metaphoric.

Once declared metaphoric, the computer would then need to go through each one of the entries for metaphorical meanings of "sweet", trying to match it with song. This could be done through an IF-THEN process, where, IF no match, THEN go to the next specified set.

Here is where my total percentages (as per Table 5.16, reduplicated here as Table 6.1), or trend scheme for a specific language (as per Figure 5.4, reduplicated here as Figure 6.1) would be applied.
Table 6.1: Percentages for the Total Data of Synaesthetic Metaphors in English (repeated from Table 5.5.3)

<table>
<thead>
<tr>
<th>Metaphor Combination</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>hearing/touch</td>
<td>41.9%</td>
</tr>
<tr>
<td>hearing/taste</td>
<td>11.6%</td>
</tr>
<tr>
<td>vision/touch</td>
<td>11.3%</td>
</tr>
<tr>
<td>hearing/vision</td>
<td>6.6%</td>
</tr>
<tr>
<td>hearing/temperature</td>
<td>6.4%</td>
</tr>
<tr>
<td>smell/taste</td>
<td>5.0%</td>
</tr>
<tr>
<td>vision/temperature</td>
<td>3.1%</td>
</tr>
<tr>
<td>smell/touch</td>
<td>2.9%</td>
</tr>
<tr>
<td>vision/taste</td>
<td>2.7%</td>
</tr>
<tr>
<td>vision/hearing</td>
<td>1.9%</td>
</tr>
<tr>
<td>temperature/taste</td>
<td>1.5%</td>
</tr>
<tr>
<td>smell/vision</td>
<td>1.2%</td>
</tr>
<tr>
<td>touch/taste</td>
<td>0.8%</td>
</tr>
<tr>
<td>smell/hearing</td>
<td>0.6%</td>
</tr>
<tr>
<td>temperature/touch</td>
<td>0.6%</td>
</tr>
<tr>
<td>taste/touch</td>
<td>0.5%</td>
</tr>
<tr>
<td>smell/temperature</td>
<td>0.3%</td>
</tr>
<tr>
<td>temperature/vision</td>
<td>0.3%</td>
</tr>
<tr>
<td>touch/hearing</td>
<td>0.3%</td>
</tr>
<tr>
<td>touch/vision</td>
<td>0.2%</td>
</tr>
<tr>
<td>hearing/smell</td>
<td>0.1%</td>
</tr>
<tr>
<td>taste/temperature</td>
<td>0.1%</td>
</tr>
<tr>
<td>vision/smell</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

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100.0%
An IF-THEN matching process such as described can be time-consuming, and since time is of essence in computer operations, as is easier program flow, it would facilitate matters if the computer had an idea of which of the many entries for metaphoric meanings of "sweet" was most likely to match. This could be done in either of two ways: Either the trend scheme could be employed, and the entries placed in a corresponding sequence such that if the computer fails to match in one entry, it will just go on to the next set in the sequence; OR the percentages could be used to sequence the entries.

If the trend scheme was being used, going by Figure 6.1 above, the computer would first go to the "sweet -- touch" entry for metaphoric meanings of "sweet", and then see if there is a match between "touch" and "song". Failing, it
would next move to "sweet -- temperature", and check for a match between "temperature" and "song"; eventually, it would move to "sweet -- hearing", and here it would match. As might be seen, with this approach, "a sweet song" would have to go through five searches in the metaphoric entries of "sweet" before matching.

Using the percentages might perhaps speed things up a bit more. Here, the percentages place an order on the senses. Observing the Table 6.1 for the entire data set of English texts scanned, we see that there are three senses, smell, vision, and audition, given in terms of taste, and that audition is statistically more probable. The entry for "sweet" would be using the "in terms of taste" percentages, and the hierarchy resulting from just those, which might not reflect the overarching trend scheme for all terms.
CHAPTER 7 -- CONCLUSIONS

7.1. Summary

The thesis question posited in the Introduction (page 3) was as follows: Are there similarities in the sequential orderings of synaesthetic associations and synaesthetic metaphors? While there is not total congruency between synaesthesia and synaesthetic metaphors in English, they do overlap significantly in their focus on hearing. However, they also diverge significantly: synaesthetes predominantly perceive things visually and English language users heavily use touch for the secondary perception. Synaesthetic metaphors are both to some extent neurologic and to some extent the logical default conclusions of the physical world around us and the logical imperatives of human biology as a whole.

In addition, the question was raised (see page 4) as to whether synaesthesia is biologically innate and expressed in different people in varying levels, or whether those claiming to be synaesthetes are merely highly poetic and imaginative. Evidence presented above indicates that the first of the two views is correct. Synaesthesia has a physiological aspect that influences cognitive processes. Synaesthesia expresses itself in a range of degrees in different people, from those rare few so extremely
synaesthetic that it interferes with their leading a "normal" life, to those -- perhaps more than half of all humans -- who consider "higher" sounds to be "brighter" and "deeper" sounds to be "darker". In regard to human evolution, it appears that synaesthesia pre-dates the emergence of language. Furthermore, since the most common forms of synaesthesia are those that add additional synaesthetic sensations to hearing (colored vowels are a very common form of synaesthesia), synaesthesia may have influenced the evolution of language significantly.

I have not come to a conclusion as to what theory of metaphor most accurately explains synaesthetic metaphors. I do, however, maintain that they are not suppressed similes as per the "comparison theory" (see Levinson 1983: 147-162). Furthermore, synaesthetic metaphors, like other metaphors, cannot be explained from either a wholly syntactic or wholly semantic framework. Not only must a theory of metaphor incorporate pragmatics, but it must also transcend linguistics in general to borrow from anthropology, psychology, and other fields of learning.

Having compiled and tabulated synaesthetic metaphors in English, I found that the most common form by far is the addition of synaesthetic touch to sounds and the sense of hearing. In general, for English, hearing is by far the most likely sense to be the recipient of synaesthetic attributes and touch is the most likely sense to be syn-
aesthetically attributed to other senses. Investigating six different senses allows for thirty possible binary combinations for synaesthetic associations; of these thirty forms, seven never manifested themselves in my English data.

Ullmann (1964) proposed a sensory ranking system for synaesthetic metaphors as follows:

smell/taste --> hearing/vision --> touch;

that is to say, smell and taste will come to be talked about in terms of hearing and vision, which will come to be talked about in terms of touch. My research does not support Ullmann but instead reveals a sensory ranking for synaesthetic metaphors in English as follows:

hearing --> vision --> smell --> temp. --> taste --> touch.

This order is the same as that posited by Classen (1993), with the addition of temperature perception between the senses of smell and taste.

According to Ritchie (1991), the Hausa place more emphasis on hearing and smell than on vision in metaphors. Andermann (1991b: 207) places the Ndembu ranking of senses as follows, from least important (most marked) to most important (least marked and most frequently used synaesthetically to describe other senses):

taste --> smell --> hearing --> touch --> vision.

Comparatively, Andermann (1991a: 231-238) claims that the Zinacanteco classificatory order is:

smell --> taste --> hearing --> temperature/touch --> vision.
These two are almost identical, except for the switch between smell and taste. On the other hand, according to Classen (1991a), the Andeans order things as:

others --* hearing --* vision,

while the Desana, of the Amazon, rank the senses as:
touch --* taste --* temperature --* smell --* vision --* hearing.

In light of this, I must conclude that Ullmann (1964) was somewhat premature and culturally biased with his studies and data when he claimed that adjectives pertaining to touch evolve towards expanding to encompass other senses, particularly sound. Such might be the case in many Indo-European languages, including, as my data indicates, English, but apparently the trend is not universal.

Thus we can also critique Williams' (1976: 463) model, which is as follows in Figure 7.1:

Figure 7.1: Williams' (1976) Model of Sensory Ranking
(repeated from Figure 5.6)

```
                               color
                               |
                               |
                               /
                               |
                touch --> taste --> smell       dimension
                               |
                               |
                               \
                               \                               \                 sound
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Williams seems to assume that the sensory order, and inter- and intrasense classifications of English are the same as for Japanese, as well as for Greek, Latin, and other Indo-
European languages. Furthermore, Williams’ model apparently does not hold up for English.

A diachronic investigation the English data I compiled revealed changes in this sensory ranking order since 1387 and the time of Chaucer. The senses of smell, vision, temperature, touch, and taste have all changed their positions at least once in the ranking order over the course of six centuries. However, throughout the duration, the sense of hearing never moved from its position as the sense by far most likely to be the recipient of synaesthetic attributes of other senses. Furthermore, although each of the other five senses has changed its place in the sequence at least once, the modern-day ranking order has evolved to a sequence almost identical with that of the 14th century.

Tabulating data in German from *Buddenbrooks* by Thomas Mann (1922), I found that the sensory ranking system for synaesthetic metaphors displayed through this book is as follows:

hearing --> smell --> vision --> temp. --> taste --> touch.

Except for the switch in order of smell and vision, the German sequence is identical to the English sequence. Most significant are that both the German and the English sequences have hearing as the sense most likely to receive synaesthetic attributes, and touch as the sense most likely to appear synaesthetically. Furthermore, the sensory ranking sequence for synaesthetic metaphors in English was iden-
tical with that for the German data, with the progression of "smell --> vision", up to the 18th century, perhaps indicating that German has conserved a trait that English evolved away from centuries ago yet is returning to within the last fifty years.

Tabulations of types of metaphor such as presented here in this thesis could be used as part of a natural language processing data-base. The relative position of one sense to another could be incorporated into computer algorithms, with accommodations for markedness theory, as could calculations of the percentage of frequency of a given form of synaesthetic relationship. This implies that the natural language processor would first have to be supplied with such data resources, which would require extensive research and compilation, but which would not, contrary to Bloomfield (1935), need to be infinite. Such a metaphor analyzing computer program could be put into operation almost immediately, far before data-base sets were complete, and could be enhanced with artificial intelligence mechanisms for evaluating new input toward constant readjustment of its relational scales and percentage calculations.

The meanings for synaesthetic metaphors are not simply there, hard-wired and innate, but are generated through semantic processes and fashioned by time and cultural elements, much like other metaphors. The trends and universals of synaesthetic metaphors are built and evolve in the same
manner as for other metaphors, through linguistic and cultural processes. These trends and universals can be investigated from a linguistic standpoint. By comparative investigation of synaesthetic metaphors on a much larger scale, heading (granted, slowly) towards global, the chart of synaesthesia might become better defined: any hard-wired synaesthetic associations might be in low percentage globally, but they should appear world-wide regardless of culture or/and language group. Metaphors qua metaphors, linguistically produced via semantic rules, will appear in pockets, and the associations should vary from culture to culture.

7.2. Questions and Concepts Toward Further Research

Group μ (1981 (1970)) maintains that certain lexemes, such as color terms, are not very polysemous nor can they be reduced much. According to Group μ, to say "the sky is blue like an orange" is quite extreme (see Group μ 1981 (1970): 96). However, what of the synaesthete who says, for example, "An orange tastes sky-blue"? Is this a rhetorical error? What (semantic) meaning does "blue" carry here? Perhaps the more essential question is, what (extended) meaning does "taste" have?

If the brain is not a tabula rasa and language is in some way molded by neurological pathways and connections, as Chomsky and others propose, we must remember that these pathways are not fixed and rigid throughout a given person's
life but rather are in a slow but steady state of flux and change (Aoki and Siekevitz 1988). Furthermore, the brain can and does regenerate damaged or missing cells in certain areas (Benjamins and Smith 1977; Morell 1977). The proportion of the area of the specific "language area(s)" of the brain to the brain's total size is relatively small, but the networks of interconnections with all other parts is overwhelmingly vast and virtually uncharted. If we combine the concept of tremendous interconnectivity with slow but gradual fluctuation of pathways, we may see that a certain cognitive concept might be fixed "hard-wired" to another cognitive concept. However, over time that hard-wiring may dissolve or/and other ones may evolve.

Let us model this: A(ntimony) might be hard-wired to B(ashful), C(apful), and D(istillation), which sets things up for additional "non-wired" (or "soft(er)-wired") associations with E(fluvia), F(ierce), G(riffin), and H(umerus), among numerous others. Now, say that the hard-wiring between A and B breaks down, while a new wire between A(ntimony) and X(enomania) emerges. We lose B and, say, E, and gain X, Y(ellow), and Z(ero). Later, AB may regenerate to restore B(ashful) and Q(ualification) (rather than E(fluvia)).

Consider now the implications of Crichton's *The Terminal Man* (1972), in which the equivalent of a "pace-maker" is installed into a man's brain to nullify certain electrical
impulses by triggering others. The technology has been existent since at least 1970, as Crichton documents, and has been in use these past two decades. With current miniaturization processes, we can now write computer programs which will in part control cognitive associations such as synaesthesia or and synaesthetic metaphors. Granted immediately that this is not "normal language", nevertheless the implications of this technology are that "normalcy", which, after all, is relative, can be defined and redefined within nanoseconds.

Another consideration is that categorization and classification of certain items might be heavily forced by the relevant perceptual mode(s). For example, there is actually no such thing as the color of an object. Rather, there is only the eye's and brain's processing and categorizing of reflected photons which by happenstance enter the eye -- a red apple is actually every color but red, as all other wavelengths are absorbed by the apple. If we are to get a better understanding of, say, a given culture's color categorization, or the classification system of smells, we may first need to gain a better understanding of the workings of sensory perceptors. This, in turn, flows over into a need for knowledge from the fields of chemistry and physics, among others.

Gould (1977; 1980) and Montagu (1962, 1981) have both written about the neotenization of humans, Anderson (1990),
among others, has furthered this with a discussion of co-
domestication. If the structuring of some human classifica-
tory systems is "forced" through our biological form and its constraints, what effect does it have upon those patterns that we are biologically domesticating our species, both intentionally and unintentionally neotenizing (for a given age, making as if more neonatal) some aspects and geronten-
izing (making as if more adult) others, within a humanly noticeable time-scale (that is, distinctive changes within two generations -- perhaps within one generation)? Moreover, how does neotenization/gerontenization/codomestication fit in with the concept that synaesthesia antedates lan-
guage?

One point that Cytowic (1989) constantly stresses in his book is the diversity and differences between each of his synaesthetic friends; although there are some overlaps and trends in the data, the variations in the synaesthetes' associations are far more overwhelming. I posit that if our hippocampi are shutting off or blinking from time to time, as Cytowic (1993) maintains, so be it, but this is not what is generating or interpreting the profusion of synaesthetic metaphors around us, and particularly not the source of most of the trends or universals. However, I do grant it might play part in the source of a few, such as colored vowels, and that these types of associations might impact to greater or lesser extent upon semantic aspects of language.
If synaesthesia is a continuum, this raises questions: If there are hard-wired universals, are they indeed global, or at least not much more 'pocketed' than, say, Old World and New World? Can language easily override and bury such an innate tendency? Are traces of these global universals still detectable although in small percentage? In regard to this second question, witness Cytowic's (1989) group's ability to handle 'normal' English associations and their tendency to deny their synaesthesia.

My next step in this investigation will be to further look at synaesthetic metaphors in other languages and cultures. Uniformity in patterns across languages might indicate a more biological basis, while divergence might reveal the degree to which low-level, random synaesthesia is mediated by culture. I am currently conducting research upon English, German, Irish, Japanese, Maori, and Algonkin (mainly Ojibwa) corpora.
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<td>touch</td>
<td>&quot;I won't,&quot; Mexico says dryly</td>
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160 temp. --> taste    bitter cold
166 hearing --> touch   replies Smaragd with more than the usual ice and stiffness
166 hearing --> temp.   replies Smaragd with more than the usual ice and stiffness
170 temp. --> taste     bitter cold
171 smell --> taste     the sour smell
181 vision --> touch    flat white
181 vision --> touch    dry yellow
181 vision --> temp.    warm rusts
183 hearing --> vision  "Tantivy," replies a dim girl-chorus
184 vision --> touch    soft close-ups
188 hearing --> touch   each word a hard-edged clap
188 hearing --> taste   sweet-talking
190 vision --> touch    softer lamps
192 hearing --> touch   in a soft voice, "Well, ... "
213 vision --> temp.    cool shadows
215 vision --> temp.    a very warm sunset-red
215 hearing --> touch   soft and strangled cries of despair
222 hearing --> vision  The bridge music here, bright with xylophones
235 hearing --> touch   her leather boots creak softly
236 hearing --> touch   hard foreign voice
253 hearing --> touch   rubber softly screeching
255 hearing --> touch   A sharp knock
256 hearing --> touch   knocking comes very loud, hard as steel
267 hearing --> taste   the college saxophones melding sweetly
285 smell --> touch     a soft and chemical smell
297 vision --> touch    Lit sharply by carbide light
305 hearing --> touch   notes clipping off sharp
309 hearing --> vision  dim shouts
310 hearing --> touch   a soft clang
310 hearing --> touch   a sharp "Himmel"
343 smell --> vision    The smell of forests on the night slowly disappears.
368 hearing --> touch   hard-echoing carbon insides
381 vision --> temp.    the ice-cold lighting
385 vision --> touch    The images grew blunt with vengeance.
407 hearing --> touch   the motors softened by the distance to tranquil purring
409 hearing --> touch   The noise of the Rocket ripped at them.
430 hearing --> touch: the sharp report
434 touch --> taste: The salt ache of accordion music
434 hearing --> touch: The salt ache of accordion music
444 vision --> touch: harsh lighting
450 hearing --> vision: their feet fade and cease to ring
458 vision --> touch: whose shadows ... are thick
479 hearing --> vision: in a blinding egg of sound
481 touch --> hearing: this loud humidity
487 temp. --> touch: The heat was heavy in the room.
488 hearing --> vision: The rainbow edge of the sound
489 vision --> touch: Light ... fans up softly
511 hearing --> touch: Their feet ring faster, sharper
523 hearing --> vision: a green murmur
523 hearing --> touch: a soft, wistful a capella
525 hearing --> taste: "Don't sweet-talk me,"
530 vision --> touch: the Anubis, softwhite, has slowed
542 smell --> taste: it smelled as sour as a burned pot
544 vision --> touch: thick yellow
548 hearing --> touch: a tune, dry and astringent
566 hearing --> touch: soft, hydraulic sounds
567 vision --> touch: a strangely wet gray
567 hearing --> touch: the patter ... smoothing out into continuous sound
568 vision --> taste: bright sour colors
573 temp. --> taste: bitter cold
586 vision --> touch: primary colors with a touch of acid to them
598 vision --> temp.: cold shadows
608 vision --> touch: moon-softened blackness
609 hearing --> touch: "Fuck," groans Major Marvy softly
609 vision --> touch: a dome light ... a soft radiant eye
626 vision --> touch: a very thick rainbow
626 vision --> touch: one dusk-heavy hour of the summer
627 hearing --> touch: the sirens wailing in thirds
635 hearing --> touch: smooth as distant wind
650 hearing --> touch: why are the voices so hard and tough
656 vision --> temp.: a soft chime
656 vision --> touch: sunlight cold gold and slick as glass
660 hearing --> touch: "Blicero and I," he begins softly
661 vision --> touch: a textured darkness
661 hearing --> touch: "Flirt if you want," Enzian now just as smooth ...
670 vision --> touch
670 vision --> hearing
675 hearing --> taste
676 hearing --> vision
680 hearing --> vision
685 hearing --> taste
686 vision --> temp.
691 vision --> temp.
692 vision --> temp.
694 hearing --> taste
695 hearing --> vision
695 vision --> touch
709 hearing --> touch
720 hearing --> touch
727 vision --> hearing
753 vision --> hearing
754 smell --> touch

something light ocher
snarling purple
sweet Stephen Foster music
why's the sound fading
their voices fading
If you hear, a "box" so sweet
warm-colored
amazingly cool and nocturnal blue
the cold shadow
the sweet, icky chord
sound-shadow
the arousing feather-point of the
sound-shadow has touched you
Her voice is perfectly hard
harsh-edged echo
These sepiya tones
The same neutral nameless tone
The soft smell of Imipolex
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| 9    | hearing --&gt; vision | ihrer hellen und besonnenen Stimme  
'her bright and sensible voice' |
| 10   | hearing --&gt; touch  | so daß ihr goldenes Armband leise klimrte  
'so that her golden bracelet clinked softly' |
| 20   | vision --&gt; hearing | dessen blauhustiger Ton in dieser Beleuchtung  
'the blue-haze tone in this lighting' |
| 21   | hearing --&gt; touch | bemerkte trocken Herr Grätjens  
'Herr Grätjen observed dryly' |
| 38   | smell --&gt; taste   | der säuerliche Geruch  
'the sourish smell' |
| 40   | hearing --&gt; temp.  | er redete hitzig  
'he spoke hotly' |
| 43   | smell --&gt; taste  | der säuerliche Geruch  
'the sourish smell' |
| 48   | hearing --&gt; touch | "Ich rechne", sagte der Konsul trocken.  
"I'm counting," said the counselor dryly. ' |
| 50   | hearing --&gt; touch | die Stimme Johanne Buddenbrooks, der ganz leise ... summte  
'the voice of Johann Buddenbrook, who very softly ... hummed' |
| 54   | hearing --&gt; touch | trägerte er leise  
'he hummed softly' |
| 57   | temp. --&gt; touch  | vom Ofen noch leise erwärmt  
'still softly warmed from the oven' |
| 57   | hearing --&gt; touch | leise klimrte  
'clinked softly' |
| 72   | hearing --&gt; touch | und antwortete leise und fest  
'and answered softly and firmly' |
| 84   | hearing --&gt; touch | mit einem leicht knallenden Geräusch  
'with a light exploding noise' |
86 vision --> taste mit säuerlichem Lächeln 'with a sourish smile'
87 smell --> touch ein leiser Duft 'a soft scent'
95 hearing --> touch mit einem leisen klirren 'with a soft clinking'
98 hearing --> touch sagte Klothilde sanft und gedehnt 'Klothilde said softly and drawlingly'
101 hearing --> touch etwas spitzig Sarkastische erwiderte 'returned something pointedly sarcastic'
102 hearing --> touch und erklärte mit leiser Stimme 'and explained with softer voice'
102 hearing --> touch "Liebe Tony," sagte die Kon- sulin sanft '"Dear Tony," said the counselor's wife softly'
105 hearing --> touch Ich habe ihn beständig mit spitzen Redensarten ver- höhnt 'I have derided him with pointed expressions'
109 hearing --> touch "Tony!" sagte er ganz leise '"Tony!" he said very softly'
122 hearing --> touch sagte Frau Schwarzkopf sanft 'Frau Schwarzkopf said softly'
124 hearing --> vision glückste viele Male hell und hohl 'gurgled many times bright and hollow'
127 smell --> temp. und ließ diesen heißen, würzigen Geruch von Klee und Kraut daraus aufsteigen 'and let this hot, spicy scent of clover and herb ascend'
132 hearing --> touch wandte sich Frau Hagenström ganz leise 'addressed Frau Hagenström very softly'
133 hearing --> temp. wiewohl sene Meinungen ein wenig hitzig und absprech- end waren
'although his opinions were a little heated and unfavourable'  134 hearing --> touch  
FRAU SCHWARZKOPF ABER SPRACH SANFT
'but Frau Schwarzkopf spoke softly'

139 hearing --> touch
MIT LEISERER STIMME
'with softer voice'

142 hearing --> touch
SAGTE MORTEN LEISE
'said Morten softly'

143 hearing --> touch
UND SAGTE LEISE: "NEIN, MORTEN, ...
'and said softly: "No, Morten, ..."'

143 hearing --> touch
"ICH WEISS, MORTEN", UNTERBRACH SIE IHN LEISE.
"I know, Morten," she interrupted him softly.'

148 hearing --> touch
PLÖTZLICH SAGTE ER LEISE
'Suddenly he said softly'

150 hearing --> temp.
SAGTE HERR GRÜNBLICH MIT KALTEM NACHDRUCK
'Herr Grünlich said with cold emphasis'

151 vision --> touch
MIT SEINEM SCHARFEN, VON KLEINEN FÄLTCHEN UMGEBENEN BLAuen AUGEN
'with his sharp, blue eyes surrounded by little wrinkles'

163 hearing --> touch
MIT LEISE KNALLENDEM GERAUSCH
'with soft clinking noise'

164 hearing --> touch
UND DANN FLÜSTERTE SIE GANZ LEISE
'And then she whispered very softly'

167 hearing --> touch
SIE SAGTE LEISE
'She said softly'

177 hearing --> taste
BEKLAGTE SICH BITTERLICH
'complained bitterly'

185 hearing --> temp.
ein WORT VERNEHMBAR, DAS KALT, LANGSAM UND NACHDRÜCKLICH SICH DEM SCHWEIGEN ENTRANG
'an audible word, which coldly, slowly and emphatically escaped from the silence'
188 hearing  -->  temp.
ganz kalter und verächtlicher Betonung
'much colder and [more] contemptuous accent'

194 hearing  -->  temp.
langsam, kalt und schwer, ein einziges Wort
'slow, cold, and severe, a single word'

195 hearing  -->  temp.
Der kalte, fest und verächtliche Ausdruck
'The cold, firm, and contemptuous expression'

196 temp.  -->  touch
mit einer sanften, ein wenig riechenden Wärme
'with a soft, a little smelling warmth'

196 temp.  -->  smell
mit einer sanften, ein wenig riechenden Wärme
'with a soft, a little smelling warmth'

211 hearing  -->  touch
gestern war er sanft gestimmt
'yesterday he was soft-voiced'

214 hearing  -->  touch
sagte er sanft
'he said softly'

215 hearing  -->  touch
"Ach, Papa", sagte sie leise
Oh, Papa," she said softly

217 hearing  -->  touch
Er sagte leise: "Vier Jahre ..."

  -->  'He said softly: "Four years ..."'

220 hearing  -->  touch
sagte er sanft
'he said softly'

223 hearing  -->  touch
sagte der Konsul rasch und hart
'the counselor said quick and hard'

229 hearing  -->  touch
sprach leise und mahnend
'spoke softly and admonishingly'

230 hearing  -->  touch
mit sanften Worten
'with soft words'

251 hearing  -->  touch
Er sprach sehr leise
'He spoke very softly'

257 hearing  -->  touch
um leise zu beten
'in order to ask softly'
unterbrach sie ... mit einem leisen und gequälten: "Gott ... Tony ..."
'Interrupted her ... with a soft and tormented: "God ... Tony ..."'
mit etwas säuerlichem Ausdruck
'with a somewhat sourish expression'
Er pflegte sie mit kühlen und spöttischen Bemerkungen
'He attended to her with cool and mocking remarks'
aber er erzählte mit Verve und Farbe
'but he narrated with verve and color'
blanke, sanft verschleierter braune Augen
'bright, soft, veiled brown eyes'
Sie sprachen das Wort "der Herr" mit der Leichtigkeit und Ursprünglichkeit von ersten Christen
'They speak the word[s] "the Lord" with the lightness and originality of the first Christians'
eine kurze, harte, unduldsame und hochfahrende Klangfarbe
'a short, hard, intolerant and high-handed tone-color'
eine kurze, harte, unduldsame und hochfahrende Klangfarbe
'a short, hard, intolerant and high-handed tone-color'
ein langes und sanftes Gespräch
'a long and soft conversation' und sprachen sanft und ernst
'am spoke soft and serious' mit leise knallendem Geräusch
'with a soft clinking noise'
302 hearing --> touch
er plötzlich zu einem leichteren Tone überging
'he suddenly changed to a lighter tone'

304 smell --> touch
in dem dichten, süßen und schweren Dunst von feinen Speisen, Parfüms, Weinen, Kaffee, ...
'in the thick, sweet, and heavy vapour of fine spices, perfumes, wines, coffee, ...'

304 smell --> taste

313 hearing --> temp.
er sprach mit Gleichgültigkeit und Kälte davon
'He spoke about it with indifference and coldness'

326 hearing --> touch
schwer seufzte
'sighed heavily'

328 hearing --> touch
fragte er dabei in leichtesten Tone
'he then asked in the lightest tone'

334 hearing --> touch
bemerkte er trocken
'he remarked dryly'

342 vision --> hearing
Das satte Lila ... mit dem Dunkelrot ... zusammenklang
'The saturated lilac ... with the dark red ... harmonize'

342 hearing --> temp.
Kalt bot sie
'She asked coldly'

347 hearing --> temp.
als sagte er irgend etwas Verbindliches und Kühles
'as he said something from obligation and coolness'

353 hearing --> touch
ganz wenige leise und kurze Worte
'very few soft and short words'

355 hearing --> touch
mit leicht knallendem Geräusch
'with soft clinking noise'

376 hearing --> touch
mit unvermittelt ruhiger und sanft interessierter Stimme
'with non-mediated, quiet, and soft, interested voice'
388 hearing --> touch sagte er leise 'he said softly'
395 hearing --> vision mit langen und dunklen oder jäh akzentuierten Vokalen 'with long and dark or abruptly accented vowels'
395 hearing --> touch Er lobt Gott mit leiser, schwellender oder starker Stimme 'He praised God with softer, more swelling, or stronger voice'
427 hearing --> touch "Ja", antwortete der Senator leise '"Yes," the Senator answered softly'
429 hearing --> touch und seine Stimme wurde noch leiser 'and his voice became still softer'
444 hearing --> vision das tiefe und das helle "Ja" -- beide ein wenig heiser 'the deep and the bright "Yes" -- both a little hotter'
444 hearing --> temp. das tiefe und das helle "Ja" -- beide ein wenig heiser 'the deep and the bright "Yes" -- both a little hotter'
445 vision --> hearing lauter Stilleben 'loud still-lifes [paintings]' 454 hearing --> touch mit scharfer Stimme 'with sharper voice'
455 hearing --> taste sagte der Senator mit Bitterkeit 'the senator said with bitterness'
459 hearing --> touch mit einem leichten Geräusch 'with a light noise'
460 hearing --> touch Er weint so leicht ... Nicht laut 'He cried so lightly ... Not loud'
461 hearing --> touch mit leiser, schmerzlicher Stimme 'with softer, more painful voice'
475 hearing --> touch
dem er hastig und leise die
Worte hinzufügte
'to which he added the words
hastily and softly'

479 smell --> touch
in dem zartem Parfüm
'in the tender perfume'

483 hearing --> touch
sagte er mit leiser, ein wenig
harter Stimme
'he said with softer, a little
harder voice'

483 hearing --> touch
sagte er ganz leise
'he said very softly'

484 hearing --> touch
sagte der Senator hart und
gereizt
'the senator said hard and
irritatedly'

489 hearing --> touch
mit leicht prasselndem Ge-
räusch
'with light crackling noise'

493 hearing --> touch
ordnete die Violinstimmen ...
und präludierte dann einen
Augenblick leicht und
kunstvoll
'adjusted the violin-string
... and then preluded a
moment lightly and artful-
ly'

496 hearing --> touch
Unter seinem fingern hub ein
... Singen an, aus welchem
sich, leise zuerst und
wieder verwehend, ...
'Under his fingers arose a ...
singing, from which he,
first softly and again
trailing away, ...'

502 hearing --> touch
nur den Grund- und Baßton noch
leise und feierlich hatte
verhallen lassen
'only the ground- and bass-
tone had still softly and
solemnly been allowed to
die away'

502 hearing --> vision
seine langen, dunklen oder
scharf akzentuierten Vokale
'his long, dark, or sharply
accented vowels'
502 hearing --> touch
sein lange, dunklen oder
scharf akzentuierten Vokale
'his long, dark, or sharply
accented vowels'

502 hearing --> touch
Dann lachte auch Hanno, leise
und tief belustigt
'Then Hanno also laughed,
softly and deeply amused'

506 hearing --> touch
"Genug, Tony, genug!" sagte
der Senator leise.
'"Enough, Tony, enough!" said
the senator softly.

511 smell --> touch
während er die scharf riech-
ende Luft dieser Räumlich-
keiten atmete
'while he breathed the sharp-
smelling air of this space'

514 vision --> touch
tief und scharf zugleich,
hellblau Augen blitzen
'deep and sharp together,
bright-blue eyes flash'

523 hearing --> touch
der alte Konsul Kröger leise
pruschte
'the old counselor Kröger
softly snorted'

528 smell --> touch
in einem zarten Duft von
Patschuli
'in a tender scent of
patchouli'

528 hearing --> touch
klingten ihre goldenen Arm-
bänder leise
'her golden bracelets clinked
softly'

531 hearing --> vision
Diese hellen Stimmen
'These bright voices'

531 smell --> taste
drang der Tannenduft und er-
weckte mit seiner süßen
Würze die Vorstellung der
Wunder
'the fir-scent penetrated and
awoke with its sweet spice
the presentation of wonder'

535 hearing --> touch
ein sanfter Orgelklang löste
sich los
'a soft organ-sound tore it-
self out'
mit einem zart metallischen Geräusch
'with a tender metallic noise'
die leisen Drehorgelklänge
'the soft barrel-organ sound'
mit leise knallendem Geräusch
'with soft clinking noise'
lachte er ... leise
'he laughed ... softly'
und antwortete dann leise und verzweifelt
'and then answered softly and despairingly'
"Ich sage natürlich ...",
fuhr Doktor Grabow sanft-mütig fort.
"'I naturally say ..."
Doctor Grabow drove forth gently.'
mit sanften und freundlichen Worten
'with soft and friendly words'
"Wie lange kann es noch dauern?" fragte Thomas Buddenbrook leise
"How long can it still last?"
Thomas Buddenbrook asked softly'
"Nein!" sagte Doktor Grabow ebenso leise
"'No!" said Doctor Grabow equally soft'
Thomas leise stöhnte
Thomas moaned softly'
"Thomas", sagte sie nicht ohne Härte
"'Thomas," she said, not without hardness'
Er tat diesen Ausspruch ziemlich leise und schnell
'He did this pronouncement somewhat soft and fast'
und erledigte mit trockenen Worten
'and finished with dry words'
"Unser Zustimmung!" wiederholte sie nach einer Pause, traurig und sogar mit einiger Bitterkeit.

"Our agreement!" she repeated after a pause, sorrowfully and even with some bitterness.

mit ein paar harten Worten 'with a pair of hard words'
mit einem leisen Gepolter 'with a soft rumble it glided down'
sagte er mit süßer Stimme 'he said with a sweeter voice'

'glowing and sharp-cutting words'
'glühende und scharfschneidige Worte'
'glowing and sharp-cutting words'
leiser Geklapper 'soft rattling'
der herb-kühle Geschmack 'the herb-cool taste'
sprach er leise, langsam und spöttisch 'he spoke soft, slow, and mockingly'
süße Akkordfolgen 'sweet chord sequences'
mit sanftem Sausen 'with a soft whistle'
die kleinen Wellen mit leisem Plaudern wider die Steinblöcke klatschten 'the little waves splashed with soft chatting against the stone blocks'
daß er manchmal leise ächzte 'that he sometimes softly groaned'
... einen leisen Gruße an seinem Vater vorübergehen
'a soft greeting to his father in passing'

eine leise ... Stimme
'a soft ... voice'

antwortete leise und eilig:
"Ja, Papa ..."
'answered soft and hasty:
"Yes, Papa ..."

und sagte ... leise und fest
'and said ... soft and firm'

und sagte scharf
'and said sharply'

ließ harte Worte gegen Privilegien und Willkür fallen
'let fall hard words against privilege and arbitrariness'

zartblau
'tender-blue'

harten Worten
'hard words'

sagte der Senator leise
'said the senator softly'

atmete er die scharf riechende Luft
'he breathed the sharp-smelling air'

mit einer scharf riechenden Flüssigkeit
'with a sharp-smelling liquid'

Hierauf bat er leise und herzlich, stillezuhalten
'Hereupon he bid softly and sincerely to keep still'

hörte ein leise piependes Geräusch
'heard a soft peeping noise'

es war nur ein dunkles, schweres Brennen in seinem Munde
'it was only a dark, heavy burning in his mouth'

sprach zu ihm mit modulierender Stimme in bald dunklen
... Lauten
'spoke to him with modulated voice in almost dark ... sounds'

Drausen gab es ein wenig winterliches Abendrot, und es beschien durchs Fenster sanft die besudelten Kleidungstücke

'Outside there was a little winterish sunset glow, and it shone through the window softly upon the soiled piece of clothing'

mit sanften Worten

'with soft words'

des Leutnants leise hervorgebrungenes Kommandowort klang auf

the second lieutenant's softly thrusted forth command-word rang out'

aber er sprach kalt und geschäftlich

'but he spoke cold and business-like'

ließ mit verzerrtem Munde einem leisen Laut vernehmen, den man als Adieu deuten mochte

'allowed with distorted mouth a soft sound to be heard, which one might interpret as Adieu'

sagte er leise und artig

'he said soft and polite'

mit schärferer Stimme

'with sharper voice'

"Geben Sie mir Ihr Buch", sagte er kalt.

'"Give me your book," he said coldly.'

Er sagte es leise

'he said it softly'

scharfe Antworten

'sharp answers'

ein leise und heftiges Lachen

'a soft and impetuous laugh'
738 hearing --> taste
Feine und glockenreine Klänge drangen aus dem Hintergrund des Zimmers und flossen süß, sinnig und zärtlich in die plötzliche Stille.
'Fine and bell-pure sounds pushed from the background of the room and flowed sweet, thoughtfully, and tenderly in the sudden silence.'

738 hearing --> touch
" " "
" " "

746 hearing --> touch
sagte er leise
'he said softly'

747 hearing --> vision
in einer Klangfarbe von mattem Silber
'in a tone-color of dull silver'

748 hearing --> touch
ganz leise, in einer Klangfarbe von mattem Silber
'very soft, in a tone-color of dull silver'

748 hearing --> vision
ganz leise, in einer Klangfarbe von mattem Silber
'very soft, in a tone-color of dull silver'

748 hearing --> taste
in verzerrten und bizarren Harmonien, quärend, irrselig und süß, das Motiv
'in distorted and bizarre harmonies, tormented, unhappy, and sweet, the motif'

749 hearing --> taste
in süßem und sehnsüchtigem Rittardando ... es war das Motiv
'in sweet and yearning ritardando ... it was the motif'

750 hearing --> taste
dieses Stücks Melodie ... Süßigkeit
'this piece's melody ... sweetness'

750 hearing --> touch
ein langes, leises Arpeggio
'a long, soft arpeggio'
Hart und frisch wird diese Stimme den Geist auf dem fremden, heißen Wege erreichen.

'Hard and fresh, this voice would reach the spirit on the strange, hot pathways.'
VITA

Sean Andrew Day was born the 30th of January, 1962, in Jackson, Michigan. From 1980 to 1981, he attended the University of Indiana's School of Music, at the Bloomington campus, where he majored in Music Composition. He began majoring in Anthropology at Purdue University's West Lafayette campus in 1981, and received his Bachelor's degree in 1984. He then went on to graduate studies in Anthropology at the University of Wisconsin in Madison, receiving a Master's degree in 1987. During the Summer of 1986, he attended the International Summer Institute for Semiotics and Symbolic Studies, held in Bloomington, Indiana.

Sean Andrew Day return to Purdue University in 1991, majoring for one semester in Computer Sciences. He then changed majors in 1991, entering into the English department's Ph.D. program in Linguistics.