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Commercializing Access to the Parallel Universe of Connotative Meaning

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Abstract

As everyone knows, words carry objective, or *denotative*, meanings that are agreed upon by the community, and are held in the common mind of the community. But words (and other forms of communication such as images, music, film, and architecture) carry *connotative* meanings as well. These connotative meanings—mainly emotional associations—are also agreed upon by the community, and held in the common mind. However, access to a comprehensive storehouse of this enormous parallel universe of emotional meaning has never been available for the benefit of individuals, businesses, and researchers. After many years of development, connotative intelligence technology, a multi-patented system for capturing, quantifying, and making available the connotative meanings of words, images, music, and other artefacts of human culture and communication, is now being implemented in commercial products. In the 1990s, Microsoft famously underestimated and undervalued the potential of the Internet—especially Internet search. This left the door open for Internet start-ups such as Yahoo and Google to emerge and grow into online giants. A similar phenomenon, albeit on a smaller scale, is now unfolding in Web 2.0 and beyond. Communication giants, including Microsoft, Yahoo, and Google, who ought to know better, are leaving commercialization of access to the universe of connotative meaning open to small companies, which are taking advantage of the situation.

[See accompanying slides 1, 2, 3, 4]

The Mother of All Technologies

If one were to confer upon a single technology the title, “mother of *all* technologies,” surely it would be language. As a species, humans have been creators and users of the technology of oral language for perhaps 100,000 to 200,000 years. We have been users of the technology of written language for at least 5,000 years (Pinker, 1994, 1999; Dawkins, 2004). Good evidence exists that

humans were creating and using elementary written language more than 30,000 years ago (Lumsden et al, 1983).

The language functionality of the human brain may be thought of as an “experience lab” (Boekhorst, 2008). Every day, we make heavy use of our personal language experience lab. We address memory of past life experience, summon memory of words and their definitions, and employ grammatical functionality, in order to assemble complex information and exchange it with others. Without this skull-based lab, humans would exist merely at the level of other great apes such as chimpanzees, gorillas, and orangutans.

Unlike our great ape cousins, humans have evolved areas of the brain specialized for language learning (Chomsky, 1972; Pinker, 1994, 1997; Jackendoff, 1994, 2002), likely thanks in large part to a mutation of the forkhead box P2 or FOXP2 gene (Pinker, 2001; Lai et al, 2001; Enard et al, 2002). Lacking the human version of FOXP2, chimpanzees, for example, cannot articulate speech, and are only capable of lifetime learning of around two hundred sign-language word-symbols. Without brain modules for language, their skills and language comprehension do not progress beyond those of a human two-year-old (Wilson, 1978; Pinker, 1997).

As for written language, without it, humans would subsist only as hunters, gatherers, and primitive agriculturists, as our forebears did thousands of years ago, before the advent of literacy.

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“Two Vocabularies Using the Same Set of Words”

Over the past few centuries, we have developed certain tools to help us make better use of the technology of language. The two main tools are, of course, the dictionary and thesaurus. But these tools provide us with access to only half of the meaning that a word represents. Each word in a language actually encodes two distinctly different types of meaning, namely, denotative and connotative. As the philosopher Richard M. Weaver put it, denotation, or description, and connotation, chiefly feelings, “represent two vocabularies using the same set of words” (Weaver, 1974).

While we have had access to storehouses of the denotative, or descriptive, vocabulary for hundreds of years in the form of dictionaries and thesauruses, we have never had access to storehouses of the connotative, or feeling, vocabulary.

Here is a typical Oxford English Dictionary denotative definition: “**violin**: a musical instrument with four strings of treble pitch played with a bow.” That’s fine as far as it goes. But how do people *feel* about a violin?

Like denotative meaning, connotative meaning is “owned by the community” (Pinker, 2007). That is, people who share a language agree not only on the denotative meanings of words, but also on their connotative meanings. The

difference is that the denotative definition *is* available in a dictionary or thesaurus, but the connotative definition *is not*—at least not yet. There are several reasons for this.

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Past Barriers to Creation of a Connotative Dictionary

Until comparatively recently, a number of barriers have stood in the way of capturing connotative definitions and storing them in databases.

First, *adequate psychometric tools* needed to be developed to accurately quantify feelings and attitudes. This advancement did not take place until the first half of the 20th century, when it was successfully addressed by psychometric specialists such as Guttman, Thurstone, and Likert (Carroll, 1960; Kidder, 1981; Uebersax, 2006).

Second, the *underlying dimensions of connotative meaning*—that is, the components of the feelings all humans have in common about objects and concepts, and the connection of those feelings to words and phrases—needed to be identified and described. This problem was solved by Osgood and colleagues at the University of Illinois in the 1950s (Osgood, 1952; Osgood et al, 1957).

Third, *comprehensive database-building systems* needed to be worked out to capture connotative information in databases that would link the entire spectrum of emotional valence and intensity to all of the words of a language. This was my own contribution, a task I began in the early 1980s, culminating in the early 2000s with the granting of a family of five patents, the Connotative Intelligence patents.

Fourth, *personal computers needed to improve*. Connotative databases, and the products that would flow from them, would not easily lend themselves to print embodiments. So it was essential, for the successful marketing of connotative products, that personal computers be widely available with sufficient memory, processing power, and operating system stability, to easily handle huge, graphics-rich databases speedily, and without freezing or crashing. Such capacity became commonly available in low-cost personal computers around 2003.

Lastly, an *adequate level of financing* was required in order to initiate commercial development of connotative databases and connotative language reference consumer products. In 2008, sufficient funding became available, and a handful of small Canadian companies are now developing the first connotative language reference tools.

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Osgood and the Discovery of E-P-A

A key figure in clarifying and advancing our understanding of connotative meaning was Charles Osgood, who devised an attitude scale called the semantic differential. *Semantics* refers to the meanings of words, and *differential* to a type of rating scale that records a person's attitude towards an object or concept along a continuum. A respondent, presented with a concept such as "violin," indicates his or her attitude by choosing a point along a continuum anchored at each end by antonyms such as "good-bad," "soft-hard," "weak-strong," etc.—pairs of polar opposites (Osgood, 1952; Osgood et al, 1957). With scores from enough subjects and enough semantic differential scales, it was possible to identify, using factor analysis, a small number of underlying dimensions of connotative meaning.

In his investigations, Osgood used *Roget's Thesaurus* (Osgood et al, 1957; Griffin, 1991) to identify 289 word pairs having polar-opposite denotative meanings. But because of limitations of the University of Illinois' ILLIAC computer (this was the 1950s), Osgood's team had to trim the number to 76 pairs. (Osgood et al, 1957). Nevertheless, Osgood et al were able to clearly identify three major underlying dimensions of connotative meaning, which Osgood termed *evaluation*, or E, *potency*, or P, and *activity*, or A (Osgood et al, 1957).

Over more than half a century, Osgood's findings have been validated thousands of times. Regardless of language or culture, the same three dimensions of connotative meaning invariably emerge. Today, the E-P-A structure of connotative meaning is considered one of the most thoroughly validated findings in social psychology (Osgood, 1969; Szalay et al, 1974; Osgood et al, 1975; Tzeng, 1975; Chapman et al, 1980; Kidder, 1981; Griffin, 1991; Heise, 1969, 1970, 1992, 2001; Bainbridge, 1994; Brewer, 2004).

The evaluative dimension is the affective component of connotative meaning, and the most important of the three—so much so that the term "connotative meaning" commonly refers mainly to the affective or emotional associations of a word or phrase (Maguire, T. O., 1973; Jerome, 1979; McArthur, 1992; Carroll, 1995; Crystal, 1995). In test after test, evaluation has accounted for most the variance. Potency and activity, while important, account for much less of the variance (Osgood, 1971; Oskamp, 1977; Brewer, 2004). A few other factors also emerge, but tend not to be nearly as prominent as E, P, and A — especially E (Osgood et al, 1957; Griffin, 1991; Bainbridge, 1994).

Semantic atlases have been compiled for research purposes. These are mini-connotative dictionaries that provide connotative profiles of from several hundred words up to as many as 1,000 words (Jenkins et al, 1958; Heise, 1965; Snider et al, 1969). They provide basic E-P-A ratings on each word, but do not account for the broad spectrum of emotions subsumed by the evaluative dimension (Komorita et al, 1967).

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E-P-A and Darwinian Natural Selection

Since evaluation, potency, and activity emerge as the dominant dimensions of connotative meaning in cultures and languages worldwide, it is reasonable to hypothesize, as Osgood did, that conventional Darwinian natural selection gave rise to the universality of the E-P-A assessment capacity in humans (Osgood, 1969, 1971; Chapman et al, 1980; Griffin, 1991; Bainbridge, 1994), especially considering that emotions themselves are evolutionary adaptations (Darwin, 1872/1998; Pinker, 1997).

Hundreds of thousands of years ago, an individual, when confronted with something unexpected, such as a saber-tooth tiger, a rabbit, a forest fire, an attractive person, a clap of thunder, or an unfamiliar tribesman, would have had to make a quick but accurate assessment of the unexpected thing. The *evaluative* (emotional) response would dominate. In an instant, the individual would experience an emotion-driven reaction: to fight, to flee, to take delight in, etc. Simultaneously, there would be an instantaneous *potency* assessment: is this thing bigger and more powerful than me? Or smaller and weaker? And, at the same time, an immediate *activity* judgment: is this thing active and fast? Or is it slow? Or is it totally inactive?

This quick, automatic E-P-A assessment would at times spell the difference between life and death. Survival success meant that E-P-A brain circuitry would be passed on genetically and eventually become encoded (with evolving language functionality) in the meanings of words.

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The Connotative Intelligence Patents

Moving from history to the present day, as mentioned, practical systems for capturing, in a database, the connotative content of an entire language have now been developed and patented. These systems make it possible, for the first time ever, to create connotative dictionaries, connotative thesauruses, and other connotative language reference tools.

The methodology calls for the construction a series of rating scales to measure connotative meaning in an absolute, context-independent way, using discrete visual analog scales (Uebersax, 2006). Our own research findings, which reveal very high correlations between individual raters' scores and group averages, support this approach, as do the findings of other investigators (Jenkins et al, 1958; Ware et al, 1970; Mehrabian, 1990, 1997, 2001).

Details of the five Connotative Intelligence patents are beyond the scope of this paper, but the patents are a matter of public record and available from the Google patent server. Their titles are as follows:

System for Identifying Connotative Meaning
 System for Quantifying Intensity of Connotative Meaning
 Interactive Connotative Dictionary System
 Interactive Connotative Thesaurus System
 System for Connotative Analysis of Discourse

These patents, which together comprise 125 claims and cover all languages, not just English, are structured such that they preclude others from using words to elicit connotative information for the development of connotative tools. Since the *only* way to elicit connotative information is by using words as descriptors, the Connotative Intelligence patents effectively cover the only possible methodology for doing the job.

Overview of Connotative Language Reference Products

Development of connotative language reference tools is now underway. The first ones will be on the market within about three months (end of 2008). Others will follow in the next 18 months to two years. They include:

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- The “connotationary” (connotative dictionary)
- The “connosaurus” (connotative thesaurus)
- The connotative language translator
- The connotation checker
- Other products based on connotative profiles

These new tools will be both fascinating and fun to use. Here are some details of what a user of connotative language tools in everyday life will see on his or her computer screen.

“**Connotationary**” (connotative dictionary). The connotationary will have several major characteristics that will set it apart from its familiar denotative cousin.

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First, unlike the denotative definition of a word, the connotative definition, or “connotative profile,” will take the form of a *graphic image*, with minimal text.

The bars on the graph will represent quantified emotional valences and intensities, as well as intensities of potency and activity. Some text will accompany the image to identify the word and context, but the main component of a connotative profile will be a graphic image.

Second, because of the space required to display a 10-bar graph and its labels, it is unlikely that a connotatory of the English language or any language will ever appear in print. Even if as many as 12 small graphs could be printed on a page, a printed volume of 1,000 pages would hold only 12,000 connotative profiles—not nearly enough for adequate representation of a whole language. Therefore, a complete connotatory will necessarily be a *digital product*.

Third, a connotatory will include a large proportion of *proper nouns and terms from popular culture*, such as first names of people, names of well-known cities, products, corporations, and celebrities from all walks of life, as well as a variety of slang terms, idioms, and even catch phrases from the advertising industry. The reason is that these entities evoke strong E-P-A reactions, both positive and negative.

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“Philips,” the corporation, for example, has a public image, and therefore the company name “Philips” will have its own connotative profile (actually a series of them—one for each nation), which users will be able to compare with the connotative profiles of other corporate names, such as “Microsoft” or “Braun.” The connotative profile of “Philips,” the corporate name, will vary considerably from country to country.

The English language has a 1,500 year history (McCrum et al, 1986; Crystal, 1995; Winchester, 2003), and the Oxford English Dictionary defines roughly half a million words (McCrum et al, 1986; Winchester, 2003). The first English language connotatory will likely have 100,000 or fewer connotative profiles. These will be the words most widely known and most commonly used by most people, whose vocabularies range from about 30,000 to 100,000 words (McCrum et al, 1986; McArthur, 1992; Pinker, 1994).

The connotatory will be a godsend for teachers and learners of a second language. The connotatory will provide them with access not only to the dictionary meanings of all the words in the second language, but also to the full spectrum of connotative meanings of all the words in that foreign language.

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“*Connosaurus*” (connotative thesaurus). The user will be able to call up the connotative profile of any word, then find other words that match that connotative profile. The resulting list of words will be “connonyms”—connotative synonyms. They will be related to each other by the similarity of emotional valence and

intensity that they elicit in the population, but will have entirely different denotative meanings.

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They will be especially useful in the creation of metaphors. Metaphor pervades vivid writing and enables a language to grow by applying new meanings to words and phrases. New metaphors grab and hold attention because they are unexpected (Heath et al, 2007). Metaphor in one form or another has always been the primary means of emotional expression in great writing (Brooks et al, 1958; Jerome, 1979; Brewer, 2004).

The connotative thesaurus will, in effect, be a thesaurus of highly accurate and emotion-eliciting metaphors.

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Connotative Language Translator. As mentioned, the Connotative Intelligence patents apply not only to the English language but to all languages. So, once connotative databases are available in multiple languages, it will be possible to incorporate connotative meaning into automated language translation, which should improve the emotional “feel” of the translation. The software will not improve syntax, but the overall accuracy of the translated message should improve.

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Connotation Checker (emotional tone checker). This application will function something like a grammar-checker. It will scan a passage of text and report on the text’s emotional tone. The user will then be able to completely change the emotional valence and emotional intensity of the original passage (and thus, the emotional effect on the user’s intended audience) by removing certain words and replacing them with words having connotative profiles with different emotional valences and quantified intensities. The application will advise the writer on the use of suggested words and phrases, so that the writer will be able to significantly change the emotional tone without drastically changing the subject matter of the message.

For the first time ever, anyone writing in everyday contexts, be it an email, blog entry, speech, essay, novel, news release, or corporate memorandum will have control over both the objective content and the emotional impact of their text.

Writing that tends to be compelling and memorable contains highly charged vocabulary. The connotation checker will enable the user to flag and remove dull, low-E-P-A words, and replace them with more emotionally loaded vocabulary. The best, most memorable writing does not merely convey information, but seeks

to persuade and entertain, so as to hold the attention of the reader or listener (Weaver, 1974; Jerome, 1979). Such writing includes: television and movie dialogue, song lyrics, novels and short stories, poetry, humour, reviews, political and religious writing, advertising and PR writing, sports writing, travel writing, speech writing, editorial commentary, blogging, and social networking commentary. What all of these varieties of writing have in common—in other words, what the great majority of effective writing has in common—is that the deliberate use of intense connotative meaning plays the central role.

The connotation checker is least likely to benefit academics and technologists, whose job is to communicate, as far as possible, objective, unbiased information. Academics seek to minimize vocabulary loaded with strong connotative associations. In so doing, academic and technical writing must necessarily break all the rules of compelling, memorable communication (alas, that includes the paper you are now reading!). Academic and technical writing typically employs the passive voice, long and complex sentences, few or no personal pronouns, few non-declarative sentences, and a style devoid of narrative. The result is boring, forgettable writing, *except* to other academics and technologists. The connotation checker might be of use to such writers in order to seek out and remove any vocabulary that has a connotative pulse.

The connotation checker may also provide the following indexes:

- An *abstract usage* index. Our hundred-thousand-year-old brains much prefer *concrete* vocabulary (words that appeal to the five senses) over abstract vocabulary (Flesch, 1949; Brooks, 1958; Godfrey et al, 1970; Jerome, 1979; Heath et al, 2007). The connotation checker will provide the user with an index of abstract usage and warn the user as abstract usage increases. For academic and technical writing, the abstract index will be off the charts, as such writing tends to be overwhelmingly abstract.
- An index of usage of *personal words*, as originally defined by Rudolph Flesch (1949); the more, the better.
- An index of usage of *personal sentences*, as originally defined by Flesch (1949); the more, the better.
- An index of usage of “*Hayakawa*” words, an indicator of clarity in writing (Hayakawa et al, 1994).

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Other Products Based on Connotative Profiles.

- *He meant/she meant* (or “Mars and Venus”) connotationary and connotaurus, showing differences between men’s and women’s connotative profiles for the same word.

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- *Connotative business and product namer.* Similar to the person-naming connotative products already in development.
- *Connotative image database, song database, movie database, product database,* etc. The user will be able to pre-select emotional valence and intensity, then search for images, songs, movies, etc. that match the user's selection.
- *Connotative word games.* Games based on language have long been popular, such as crossword puzzles and Scrabble.

Table 1 below summarizes the differences between the main existing denotative language tools, and their forthcoming connotative counterparts.

**Table 1:
Existing Denotative Language Tools and their Connotative Counterparts**

EXISTING DENOTATIVE LANGUAGE TOOLS User Tools to Access the DENOTATIVE Universe of Meaning ("What Is It?")	CONNOTATIVE COUNTERPARTS User Tools to Access the CONNOTATIVE Universe of Meaning ("How Does It Feel?")
<p>Dictionary</p> <ul style="list-style-type: none"> • A database of denotative definitions of each word in the language • <i>Availability:</i> this tool has been available for several centuries 	<p>Connotatory</p> <ul style="list-style-type: none"> • A database of E-P-A connotations of each English language word (except function words such as articles, prepositions, etc.), also incorporating idioms, names of well-known cities, celebrities, corporations, products, etc. • <i>Availability:</i> <ul style="list-style-type: none"> - Full U. S. English language connotatory available in approximately 18 months - Connotatory of first names (U. S.) available by the end of 2008
<p>Thesaurus</p> <ul style="list-style-type: none"> • Database of words grouped by similarity of denotative meaning • <i>Availability:</i> this tool has been available for more than 150 years (<i>Roget's Thesaurus</i>, 1852) 	<p>Connosaurus</p> <ul style="list-style-type: none"> • Database of words grouped by similarity of "connonyms": evoked emotions and other connotations (E-P-A values), <i>regardless of denotative meaning</i> • <i>Availability:</i> <ul style="list-style-type: none"> - Full U. S. English language connosaurus available in approximately 18 months - Connosaurus of first names (U. S.) available by the end of 2008
<p>Electronic Denotative Language Translators</p> <ul style="list-style-type: none"> • Software that automatically translates text across languages, according to denotative meaning • <i>Availability:</i> these tools have been available for more than 20 years 	<p>Electronic Denotative/Connotative Language Translators</p> <ul style="list-style-type: none"> • Software that automatically translates text across languages, according to both denotative and connotative meaning • <i>Availability:</i> likely within 5 years. This software will require connotative databases in at least two languages.
<p>Grammar and Spell Checkers (Software)</p> <ul style="list-style-type: none"> • Software that checks the accuracy of grammar and spelling • <i>Availability:</i> these tools have been available for more than 20 years 	<p>Emotional Tone Checker/ "Connotation Checker" (Software)</p> <ul style="list-style-type: none"> • Software that reports on the emotional tone (and other connotations) of a piece of text and provides the user with alternative words and phrases to change the tone • <i>Availability:</i> this tool will be available in approximately 18 months

Market Research Findings

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Over an 18-month period in the early 2000s, during the four-year patenting process, Connotative Intelligence Corporation contracted with a consulting firm to gather market research data on potential connotative products. Website visitors were presented with descriptions and images of various connotative products, and asked to rate perceived usefulness. A total of 3,390 online questionnaires were completed by visitors from more than 70 countries, speaking a total of 64 languages.

The results indicated strongly that respondents easily understood what connotative language tools were and how they would be used. Respondents also perceived such tools as being highly useful. (For full results, including respondent comments, see <http://connotative.com/Survey.htm>. The charts are based on 2,200 responses because, after about 1,000 responses, the charts changed so little that updating them became redundant.)

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Connotative Products Currently In Development

Four small Canadian companies are currently involved in two enterprises that are bringing connotative language products to market.

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One project is the connotative language checker, as described above.

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The other is a combined connotationary and connosaurus of the first names of natural persons. Mehrabian published the first connotative dictionary of first names in 1990. Although it was limited in scope to connotative profiles comprised of only half a dozen scales associated with each name, it was nonetheless commercially successful, demonstrating the viability of a connotative product in the marketplace (Lawson, 1971; Mehrabian, 1990, 1997, 2001).

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The companies developing current connotative products are using the Connotative Intelligence patents under license.

Commercializing Access to the Parallel Universe of Connotative Meaning: What's Next?

Language being the “mother of all technologies,” it is not surprising that there has long been a huge proven market for language tools focused on word meanings, namely, dictionaries and thesauruses:

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- Dictionaries have been around for hundreds of years and are perennial best-sellers. They are so useful that they are built into word processing applications such as Microsoft Word and WordPerfect.
- When the first comprehensive thesaurus was introduced more than 150 years ago, the public immediately grasped its usefulness. The thesaurus has remained a perennial best-seller ever since. Like the dictionary, the thesaurus is also built into Microsoft Word and WordPerfect.
- According to Quantcast.com, which publishes website traffic data, the website *Reference.com*, which provides free lookup of words in online dictionaries and thesauruses, averages 10 million unique U. S. visitors monthly, and is one of the top 100 most-visited websites.
- Since 1852, the year *Roget's Thesaurus* was published, there have been no new language tools that provide information on word meanings. It is interesting to note that *Roget's Thesaurus* was an immediate hit, reprinted 28 times in various editions before Roget died 17 years later (Atkinson, 2001; Kendall, 2008). It is fitting that today, the word “Roget's” is itself a synonym for thesaurus.

Summarizing the development of connotative language reference tools:

- Until as recently as 2003, it was technically impossible to make connotative language reference tools available to mass markets of ordinary consumers. Today, desktop and portable computing devices do have the capability to handle connotative tools easily.
- Market research shows that the public readily grasps the usefulness of language tools that would provide connotative meaning, and is eager to purchase such tools that provide such meaning, once they become available.
- Connotative language reference tools are not expensive to create. One reason is that the Internet is an ideal platform for building low-cost data collection interfaces (Heise, 2001; Smith et al, 2002). As well, no special sensor technology is required to collect connotative data. The companies currently developing

connotative products are spending only six-figure amounts, which is very modest by new product development standards.

- The developers of commercial connotative reference products are doing so under license, because the only practical methodology for creating connotative language tools is protected by a suite of patents.
- The providers of the first connotative language tools will not only have first mover advantage in the marketplace, but will also have no competition until the patents expire, more than 10 years in the future.
- The Connotative Intelligence patents also cover connotative profiling of other stimuli, not just words. This includes images, songs, celebrities, movies, websites, consumer products, and corporations.
- Connotative products that will be entering the marketplace soon will be easy to distribute because they will be in various downloadable digital formats.

In light of the above, it would seem reasonable that a major corporation or two, especially providers of online information, such as Google, Yahoo, and Microsoft, would see a commercial advantage in being the first to introduce into the information marketplace, at very little development and distribution cost, and with no prospect of competition for at least 10 years, the first language tools in more than 150 years to contain new and previously unavailable content about the very meanings of words, namely, their emotional meanings. After all, we live in the information age, and language is the ultimate information engine. As well, the Internet remains mainly a platform of language-based communication. For a very modest investment of a million or two dollars—pocket change to a corporation such as Google or Microsoft—a large corporate first mover, with its marketing muscle and huge customer base, would stand to recoup hundreds of times its development cost, through sales of connotative products.

Yet, our efforts to interest these companies and other large corporations have met with no response, either positive or negative.

It is possible, even likely, that we are not reaching the people in those large organizations who have sufficient vision to recognize the value of language tools that make available the emotional meanings of all the words of a language. On the other hand, they simply may not think the emotional meanings of words constitutes information that has any commercial value. Movers and shakers of large tech companies have in the past made huge miscalculations about innovation in the area of information technology. Microsoft, for example, misjudged the future importance of Internet search and content provision, and soon found itself far behind Yahoo and Google. As for Google, after developing their mighty search engine, Sergey Brin and Larry Page offered to sell it to Yahoo for one million dollars, and were turned down.

Connotative content represents a completely new portal into the world's most important technology, which is language itself. Things move quickly in this

information age. Web 2.0—the world of language-based developments such as blogs, wikis, and social networking, to name a few—is expanding rapidly.

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The companies now bringing connotative products to market are not waiting around to see if a large corporation will have the vision to take an interest in the commercial value of first access to the emotional universe of language. While it would be very helpful to work with a major corporate partner, the companies now developing connotative products have sufficient resources to make these products available commercially. If a major corporation decides to partner with one of the connotative licensees, or become a new licensee, product development time could be reduced, and broad distribution made easier.

References

- Atkinson, W. I. 2001. *Prototype: How Canadian innovation is shaping the future*. Toronto: Thomas Allen.
- Bainbridge, W. S. 1994. Semantic differential. In Asher, R. E., & Simpson, J. M. Y. *The Encyclopedia of Language and Linguistics*, Vol. 7. Oxford: Pergamon Press.
- Bestgen, Y. 1994. Can emotional valence in stories be determined from words? *Cognition and Emotion*, 8, 21-36.
- Boekhorst, F. 2008. Foreword. In Westerink, J. H. D. M., Ouwerkerk, M., Overbeek, T. J. M., Pasveer, W. F., & de Ruyter, B. *Probing experience: From assessment of user emotions and behaviour to development of products*. Dordrecht, The Netherlands: Springer.
- Brewer, W. F. 2004. Charles Osgood: The psychology of language. In Hoddeson, L. (Ed.) *No boundaries: University of Illinois vignettes*. Urbana: University of Illinois Press.
- Brooks, C., & Warren, R. P. 1958. Metaphor. In *Modern rhetoric*. 2nd ed. New York: Harcourt, Brace & World.
- Carroll, D. A. 1995. *A manual of writers' tricks*. 2nd ed. New York: Marlowe.
- Carroll, J. B. 1960. Vectors of prose style. In Seboek, T. A. (Ed.) *Style in language*. New York: John Wiley & Sons.
- Chapman, R. M., McCrary, J. W., Chapman, J. A. Chapman, & Martin, J. K. 1980. Behavioral and neural analyses of connotative meaning: Word classes and rating scales. *Brain and Language*, 11, 319-339.
- Chase, W. O. 2006. *How music really works*. 2nd ed. Vancouver, BC: Roedy Black Publishing.
- Chomsky, N. 1972. *Language and mind*. Enl. Ed. New York: Harcourt Brace Jovanovich.

- Crystal, D. 1995. *The Cambridge encyclopedia of the English language*. Cambridge: Cambridge University Press.
- Dawkins, R. 2004. *The ancestor's tale: A pilgrimage to the dawn of life*. London: Weidenfeld & Nicolson.
- Enard, W., Przeworski, M., Fisher, S. E., Lai, C. S. L., Wiebe, V, Kitano, T., Monaco, A. P., & Paabo, S. 2002. Molecular evolution of FOXP2, a gene involved in speech and language. *Nature*, 418, 869-872.
- Finstuen, K. 1977. Use of Osgood's semantic differential. *Psychological reports*, 41, 1219-1222.
- Flesch, R. 1949. *The art of readable writing*. New York, NY: Harper & Row.
- Godfrey, R. R., & Natalicio, L. F. S. 1970. Evaluation on semantic differential equals abstraction plus error. *Psychological Reports*, 27, 467-473.
- Griffin, E. 1991. Mediational theory of meaning of Charles Osgood. In *A first look at communication theory*. New York: McGraw-Hill.
- Hayakawa, S. I., & Ehrlich, E. 1994. *Choose the right word: A contemporary guide to selecting the precise word for every situation*. New York: HarperCollins.
- Heath, C., & Heath, D. 2007. *Made to stick: Why some ideas survive and others die*. New York: Random House.
- Heise, D. R. 1965. Semantic differential profiles for 1,000 most frequent English words. *Psychological Monographs*, 79, whole no. 601.
- Heise, D. R. 1969. Some methodological issues in semantic differential research. *Psychological Bulletin*, 72, 406-422.
- Heise, D. R. 1970. The semantic differential and attitude research. In Summers, G. F. (Ed.) *Attitude measurement*. Chicago: Rand McNally.
- Heise, D. R. 1992. Affect control theory and impression formation. In Borgatta, E., & Borgatta, M. (Eds.). *Encyclopedia of Sociology*, Vol. 1. New York: Macmillan.
- Heise, D. R. 2001. Project Magellan: Collecting cross-cultural meanings via the Internet. *Electronic Journal of Sociology*, 5. <http://www.sociology.org/content/vol005.003/mag.html>. Accessed: September 12, 2008.
- Heise, D. R., & Calhan, C. 1995. Emotion norms in interpersonal events. *Social Psychology Quarterly*, 58, 223-240.
- Jackendoff, R. 1994. *Patterns in the mind: Language and human nature*. New York: Basic Books.
- Jackendoff, R. 2002. *Foundations of language: Brain, meaning, grammar, evolution*. Oxford: Oxford University Press.
- Jenkins, J. J., Wallace, A. R., & Suci, G. J. 1958. An atlas of semantic differential profiles for 360 words. *American Journal of Psychology*, 71, 688-699.
- Jerome, J. 1979. *The poet and the poem*. Cincinnati, OH: Writer's Digest Books.
- Kendall, J. 2008. *The man who made lists: Love, death, madness, and the creation of Roget's Theaurus*. New York: Putnam.

- Kidder, L. H. 1981. *Research methods in social relations*. 4th ed. New York: Holt, Rinehart & Winston.
- Kies, D. 2008. Evaluating grammar checkers: A comparative ten-year study. Hypertext Books. <http://papyr.com/hypertextbooks/grammar/gramchek.htm>. Accessed May 26, 2008.
- Komorita, S. S., & Bass, A. R. 1967. Attitude differentiation and evaluative scales of the semantic differential. *Journal of Personality and Social Psychology*, 6, 241-244.
- Lai, C. S. L., Fisher, S. E., Hurst, J. A., Vargha-Khadem, F., & Monaco, A. P. 2001. A forkhead-domain gene is mutated in a severe speech and language disorder. *Nature*, 413, 519-523.
- Lansky, Bruce. 2007. *The new baby name survey book*. Minnetonka, MN: Meadowbrook Press.
- Lawson, E. D. 1971. Semantic differential analysis of men's first names. *The Journal of Psychology*, 78, 228-240.
- Lumsden, C. J., & Wilson, E. O. 1983. *Promethean fire: Reflections on the origin of mind*. Cambridge, MA: Harvard University Press.
- McArthur, T. (Ed.) 1992. *The Oxford companion to the English language*. New York: Oxford University Press.
- McCrum, R., Cran, W., & MacNeil. 1986. *The story of English*. New York: Viking Penguin.
- Maguire, T. O. 1973. Semantic differential methodology for the structuring of attitudes. *American Education Research Journal*, 10, 295-306.
- Mehrabian, A. 1990. *The name game: The decision that lasts a lifetime*. Bethesda, MD: National Press Books.
- Mehrabian, A. 1997. The revised name connotation profile. Available from author.
- Mehrabian, A. 2001. Characteristics attributed to individuals on the basis of their first names. *Genetic, Social, and General Psychology Monographs*, 127, 59-88.
- Osgood, C. E. 1952. The nature and measurement of meaning. *Psychological Bulletin*, 49, 197-237.
- Osgood, C. E. 1969. On the whys and wherefores of E, P, and A. *Journal of Personality and Social Psychology*, 12, 194-199.
- Osgood, C. E. 1971. Exploration in semantic space: A personal diary. *Journal of Social Issues*, 27, 5-64.
- Osgood, C. E., May, W. H., & Miron, M. S. 1975. *Cross-cultural universals of affective meaning*. Urbana: University of Illinois Press.
- Osgood, C. E., Suci, G. J., & Tannenbaum, P. H. 1957. *The measurement of meaning*. Urbana: University of Illinois Press.
- Oskamp, S. 1977. *Attitudes and opinions*. Englewood Cliffs, NJ: Prentice-Hall.
- Pinker, S. 1994. *The language instinct*. New York, NY: HarperCollins.
- Pinker, S. 1997. *How the mind works*. New York, NY: W. W. Norton & Co.

- Pinker, S. 1999. *Words and rules: The ingredients of language*. New York: Basic Books.
- Pinker, S. 2001. Talk of genetics and vice versa. *Nature*, 413, 465-466.
- Pinker, S. 2007. *The stuff of thought: Language as a window into human nature*. New York: Penguin.
- Smith, H. W., Ike, S., & Li, Y. 2002. Project Magellan redux: Problems and solutions with collecting cross-cultural affective meanings via the Internet. *Electronic Journal of Sociology*, 6.
http://www.sociology.org/content/vol006.003/smith_etal.html. Accessed: September 12, 2008.
- Snider, J. G., & Osgood, C. E. (Eds.) 1969. Semantic atlas for 550 concepts. In *Semantic differential technique: A sourcebook*. Chicago: Aldine.
- Szalay, L. B., & Bryson, J. 1974. Psychological meaning: Comparative analyses and theoretical implications. *Journal of Personality and Social Psychology*, 30, 860-870.
- Tedford, W. H., & Synnott, C. S. 1972. Use of the semantic differential with poetic forms. *The Psychological Record*, 22, 369-373.
- Tzeng, O. C. S. 1975. Reliability and validity of semantic differential E-P-A markers for an American English representative sample. *Psychological Reports*, 37, 292.
- Uebersax, J. S. 2006. Likert scales: dispelling the confusion. *Statistical methods for rater agreement*.
<http://ourworld.compuserve.com/homepages/jsuebersax/likert.htm>. Accessed: September 9, 2008.
- Ware, E. E., Radtke, R. C., & Berner, E. 1970. The effect of context on semantic differential ratings. *Canadian Journal of Behavioural Science*, 2, 246-252.
- Weaver, R. M. 1974. *A rhetoric and composition handbook*. New York: William Morrow.
- Westerink, J. H. D. M. 2008. Experience in products. In Westerink, J. H. D. M., Ouwerkerk, M., Overbeek, T. J. M., Pasveer, W. F., & de Ruyter, B. *Probing experience: From assessment of user emotions and behaviour to development of products*. Dordrecht, The Netherlands: Springer.
- Wilson, E. O. 1978. *On human nature*. Cambridge, MA: Harvard University Press.
- Winchester, S. 2003. *The meaning of everything: The story of the Oxford English Dictionary*. Oxford: Oxford University Press.