2. Overview of the Phonosemantics Literature

2.1 The Beginnings of Phonosemantics

2.1.1 The Ancients

Like most other fields of modern research – chemistry, astronomy, mathematics – linguistics, and phonosemantics in particular, finds its beginnings in the mystical and religious literature of the various traditions. For example, in many traditions archetypal meanings were associated with the letters of the alphabet and used as oracles – the Viking Runes, the Hebrew Kabbalah, the Arab Abjad, etc.. References of this kind are very common in *The Upanishads*, *The Nag Hammadi Library,* the Celtic *Book of Teliesin*, as well as early Christian works that were rejected from the Biblical canon, the Shinto Kototama, and so forth. Several of these are reviewed and discussed in, for example, Stefan Etzel's (1983) dissertation and in Magnus (1999).

The first work that took a more modern, critical approach to the subject was Plato's *Cratylus* dialogue. In the first half of the *Cratylus*, Socrates argues with Hermogenes – a proponent of the Conventionalist Overgeneralization – that the foundation of word semantics must lie in phonetics: "That objects should be imitated in letters and syllables, and so find expression may appear ridiculous, Hermogenes, but it cannot be avoided – there is no better principle to which we can look for the truth of first names." He then goes on to provide a number of examples, of phonosemantic correlations, none of which are so complete that they can be said to constitute proof or even particularly strong evidence. In the second half of the dialog, Socrates argues against Cratylus – a proponent of the Naturalist Overgeneralization – trying to tone down his extremist view.

Socrates provides what seems to most readers – including the present author – to be more compelling evidence against Cratylus than against Hermogenes. Many and perhaps most discussions of the *Cratylus* therefore interpret the dialog as concluding that there is no evidence for a correlation between phonetics and meaning. Other analyses of the *Cratylus* think of Socrates' mimetic musings as mistaken, but nonetheless not a bad try, considering how underdeveloped linguistic science still was in the 5th Century BC. We, however, interpret the dialog more along the lines outlined in Genette (1976), which suggests that Socrates' observations were not trivially mistaken nor was he in fact contradicting himself. Rather he was merely stating that neither extremist view could be wholly maintained. That is, it was neither true that phonetics had no effect whatsoever on word semantics, nor did it wholly determine word semantics. His view is perhaps stated best in these lines:

> SOCRATES: Imagine that we have no voice and no tongue, but want to communicate with one another... Would we not imitate the nature of the thing: lifting the hands to heaven would mean lightness and upwardness. Heaviness and downwardness would be expressed by letting them drop to the ground.
> HERMOGENES: I do not see that we could do anything else.
> SOCRATES: And when we want to express ourselves with the voice or the tongue or the mouth, the expression is simply the imitation of what we want to express?
> HERMOGENES: I think it must be so.
> SOCRATES: Nay, my friend, I am inclined to think we have not reached the truth as yet
> HERMOGENES: Why not?
> SOCRATES: Because if we have, we shall have to admit that people who imitate

> sheep or roosters or other animals are naming that which they imitate.
> HERMOGENES: Quite so... But I wish you could tell me then, Socrates, what sort of an imitation is in a name?
> SOCRATES: In the first place, I would say it is not a musical imitation, although that is also vocal, nor is it an imitation of that which music imitates. In my opinion, that would not be naming. Let me express it this way. All objects have sound and figure and many have color... But the art of naming does not appear to be concerned with imitations of this kind. The arts which have to do with them are music and drawing. Again, is there not an essence of each thing just as there is color and sound? And is there not an essence of color and sound as well as of anything else?
> HERMOGENES: I should think so.
> SOCRATES: Well, if anyone could express the essence of each thing in letters and syllables, would he not express the nature of each thing?

This dialogue raises all the major issues that run through the ensuing literature on the arbitrariness of the sign. On the one hand, there is a correlation between phonetics and semantics; on the other hand the sign is obviously arbitrary in significant ways. The essential nature of the correlation does not lie in mere imitation, or onomatopoeia. But it is an imitation of sorts – an imitation, Socrates claims, of the *essence* of the thing to which the word refers.

It's pretty clear why modern science is not very happy with the notion of looking for the *essence* of a word or thing. Worse yet, Socrates proposes to mimic this abstract 'essence' of a concept or material thing in a completely different medium – that of sound. It's hard to imagine what the essence of a 'chair' is, and harder still to imagine how that chair-essence might be represented as a sound. And if Socrates is right, it makes no sense that different cultures would elect to use completely different sounds to mimic this one essence unless one of the cultures is right and the others are wrong. And that – for very understable and appealing reasons – is an abhorrent thought to the modern linguist. Not until the 20th Century were methods applied with any regularity which could address this very serious dilemma in the study of phonosemantics.

2.1.2 The 17th-19th Centuries

The subject was sporadically discussed in religious and mystical texts throughout the Middle Ages and Renaissance. In the 1653, according to Genette (1976), John Wallis published a list of English phonesthemes in his *Grammatica linguae anglicanae* including among a great many others, for example:

> – wr shows obliquity or twisting: *wry, wrong, wreck,* and *wrist,* "which twists itself and everything else in all directions."
> – br points to a breach, violent and generally loud splitting apart: *break, breach, brook.*
> – cl reflects adherence or retention: *cleave, clay, climb, close,* "almost all of which come from *claudo."*

He then went on to argue that in the case of several words at least, the bulk of their semantics could be analyzed down to a combination of their phonesthemes. For example in the word 'sparkle', the initial 'sp-' indicates dispersion (spit, splash, sprinkle); the medial 'ar' represents high-pitched crackling; the 'k' is a sudden interruption; and the final 'l', frequent repetition (wiggle, wobble, battle, twiddle, mottle, etc.)

John Locke (1689), on the other hand spoke out against the idea in his *An Essay on Human Understanding* as follows:

> "Words... come to be made use of by Men, as the Signs of their Ideas; not by any natural connexion, that there is between particular articulate Sounds and certain Ideas, for then there would be but one language amongst all Men; but by voluntary Imposition, whereby such a Word is made arbitrarily the mark of such an Idea."

Here we see an example of the Conventionalist Overgeneralization: Locke essentially argues that if there were any natural connection between Sound and Idea whatsoever, we would all be speaking the same language. This conclusion is based in the presumption that there is only one level of word meaning.

In 1676, Gottfried Wilhelm Leibniz published a point by point critique of Locke's book, entitled *New Essays on Human Understanding*. In it, he responds:

> *[On the connexion between words and things, or rather on the origin of natural languages]* We cannot claim that there is a perfect correpondence between words and things. But signification is not completely arbitrary either. There must be a reason for having assigned this word to that thing. Languages do have a natural origin in the harmony between the sounds and the effect impressed on the soul by the spectacle of things. I tend to think that this origin can be seen not only in the first language, but in the languages that came about later, in part from the first one, and in part from the new usages acquired by man over time and scattered over the surface of the earth.

Throughout the 18th and 19th Centuries, many philosophers, poets, writers and Hermetics expressed sympathy or evidence for the Phonosemantic Hypothesis. These include Alexander Pope, Emanuel Swedenborg, Novalis, Goethe, Honoré de Balzac, Ernest Renan, Ralph Waldo Emerson, Victor Hugo, Henry David Thoreau, Rudolf Steiner, Lewis Carroll, Joseph von Eichendorff, Arthur Rimbaud, and Marcel Proust. In the 18th and early 19th Centuries, there was a scholarly tradition of phonosemantics in France, the original manuscripts of which are very hard to come by. The author therefore takes her information about this period second hand from Genette's (1976) excellent history entitled *Mimologiques* translated by Thaïs Morgan and published by the University of Nebraska Press and from Earl R Anderson's (1998) wonderful overview of the field entitled *A Grammar of Iconism*. In 1765, President Charles de Brosses wrote *Traité de la formation mécanique des languages*, in which he argued that there existed a perfect language which was 'organic, physical and necessary'. In this primeval, universal language the sound conformed wholly to the meaning of the words. Then with time, this principle was corrupted by various means, and languages diverged resulting in our modern Babel. A few years later in 1775 Antoine Court de Gébelin wrote *Origin du language et de l'écriture.* Gébelin, like Cratylus, took the position that all semantics is imitation. Both Gébelin and de Brosses devoted a significant portion of their studies to orthographies, a topic which will not concern us in the present dissertation.

In 1808, the young Charles Nodier produced his *Dictionnaire des onomatopées*. The dictionary included entries such as:

> *Bedon* {potbelly}: onomatopoeia of the noise of a drum.

> *Biffer* {to scratch out}: noise made by a quill pen passed rapidly over paper.
> *Briquet* {tinder}: noise of two hard bodies that violently collide with each other, breaking one into pieces

Nodier's youthful dream was to create the perfect phonosemantic language. Twenty years later, he writes of himself, "I... boldly pursued my ambitious career, for there were no obstacles whatever to an eighteen-year-old and no limit at all to his powers." Linguistic egocentrism or perfectionism is a particularly prevalent theme in the field of phonosemantics. The Naturalist Overgeneralization predisposes the researcher to think that some languages (most frequently his own native tongue) more truly exhibit this 'perfect' sound-meaning correlation than others. Plato seemed to think as much of Greek; Indian scholars argue the same for Sanskrit; Wallis found English to be superior, the Kabbalists claim that Hebrew is the most perfect tongue, and so on and so forth. De Brosses, on the other hand, argued for a perfect *primordial* language (albeit most closely resembling French). Nodier's dream of a perfect language, however, lay not in the past, but in the future

But in 1834, in his *Notions élémentaire de linguistique* Nodier changes his mind on the subject and writes, "It does not follow from this system that all creatures ought to be designated by universal homonyms, because for this it would be indispensible for each creature to offer itself only one single character and to be potentially judged by only one single sensation, a ridiculous limitation. Customs, inclinations, habits, susceptibility to impressions: all these are of great consequence in the function of the person doing the naming, as are the perceptible aspects, forms, qualities, behavior of the object named, and as are the place, time, circumstances in which the name emerges." Nodier here speaks out against the adamant Cratylist, who makes the error of thinking that arbitrariness or interpretation play no part in semantics, and it must follow that there is either only one language, or at least only one perfect language, all linguistic arbitrariness being perversions of this great mimetic Truth.

In 1836 Wilhelm von Humboldt published *Über die Verschiedenheit des menschlichen Sprachbaues und ihren Einfluß auf die geistige Entwicklung des Menschengeschlechts*. In it, he distinguishes three types of relationships between sound and meaning in language. The first class is what is generally called 'onomatopoeia' throughout the phonosemantic literature. It is based in acoustics rather than articulation and is limited to those referents which emit a sound:

> "1. The directly imitative, where the noise emitted by a sounding object is portrayed in the word..."

His second type most closely resembles Socrates' notion of phonosemantic imitation... imitation of a semantic 'essence' by the actual articulation of the phoneme:

> "2. The designation that imitates, not directly, but by way of a third factor common to both sound and object. It selects for the objects to be designated, sounds which, partly in themselves and partly by comparison with others, produce for the ear an impression similar to that of the object upon the soul: as *stand, steady, stiff* give the impression of fixity; the Sanskrit *li* that of melting, dispersal, dissolution; *not, nibble* and *nicety* that of finely and sharply penetrating. In this way objects that evoke similar impressions are assigned words with predominantly the same sounds, such as *waft, wind, wisp, wobble* and *wish*, wherein all the wavering, uneasy motion, presenting an obscure flurry to the senses, is expressed by the *w*,

> hardened from the already inherently dull and hollow *u*. This type of designation, which relies upon a certain significance attaching to each individual letter, and to whole classes of them, has undoubtedly exerted a great and perhaps exclusive dominance on primitive word designation. Its necessary consequence was bound to be a certain likeness of designation throughout all the languages of mankind, since the impression of objects would have everywhere to come into more or less the same relationship to the same sounds. Much of this kind can still be observed even in languages of today, and must in fairness prevent us from at once regarding all the likeness of meaning and sound to be encountered as an effect of communal descent."

Von Humbolt's third class we find to be a quite general linguistic process which we will call 'clustering' following Weinreich's (1963) terminology:

> 3. Designation by sound-similarity, according to the relationship of the concepts to be designated. Words whose meanings lie close to one another are likewise accorded similar sounds; but in contrast to the type of designation just considered, there is no regard here to the character inherent in these sounds themselves. For its true emergence, this mode of designation presupposes verbal wholes of a certain scope in the system of sounds, or can at least be applied more extensively only in such a system. It is, however, the most fruitful of all, and the one which displays with most clarity and distinctness the whole concatentation of what the intellect has produced in similar connectedness of language...."

Without providing evidence for it at this point, our data suggests, contrary to Von Humboldt's findings, that clustering is still subject to the constraints of the inherent character of the sounds. Von Humboldt offered the following very clear description of his conception of the phonosemantic process:

> "But since language-making finds itself here in a wholly intellectual region, at this point there also develops, in a quite eminent way, yet another, higher principle, namely the pure and – if the term be allowed – quasi-naked *sense of articulation*. Just as the effort to lend meaning to sound engenders, as such, the nature of the articulated sound, whose essence consists exclusively in this purpose, so the same effort is working here toward a determinate *meaning*. This determinacy becomes greater as the field of the designandum still hovers effectively before the mind; for this field is the soul's own product, though it does not always enter, as a whole, into the light of consciousness. The making of language can thus be more purely guided here by the endeavor to distinguish like and unlike among concepts down to the finest degree, by choice and shading of sounds. The purer and clearer the intellectual view of the field to be designated, the more the making of language feels compelled to let itself be guided by this principle; and its final victory in this part of its business is that principle's complete and visible dominance.... The crux of the matter is that significance should truly permeate the sound; that nothing in the sound but its meaning should appear, at once and unbroken, to the ear that receives it; and that, starting from this meaning, the sound should appear precisely and uniquely destined for it. This naturally presupposes a great precision in the relations delimited, since it is these that we are chiefly discussing at this point, but also a similar precision of the sounds. The specific and unphysical the latter, the more sharply they are set off from one another. Through the dominance of the sense

> of articulation, both the receptivity and the spontaneity of the language-making power are not merely strengthened, but also kept on the one right track; and since this power invariably deals with every detail of language as if the entire fabric that the detail deals with were simultaneously present to it by instinct, it follows that in this area, too, the same instinct is at work and discernible, in proportion to the strength and purity of the sense of articulation."

In 1891, two years before his death, Georg von der Gabelentz published a very influential work entitled *Lautsymbolik*. According to Jakobson (1979), he cited among other things, evidence from child language acquisition. Like all of the researchers that preceded him, he invested a fair amount of thought into the interconnection between phonosemantics on the one hand and etymology and language origins on the other. He writes that words linked together by both sound and meaning manifest 'elective affinities'. As we gradually acquire our mother tongue, our feeling for the sounds etymologizes without any regard to historical linguistics. This tendency does, however, in his view have a considerable effect on language evolution. This present dissertation will not concern itself only very peripherally with the issues of language evolution. Its purpose is to provide evidence for productive synchronic phonosemantic processes.

At the end of the century, Maurice Bloomfield published two beautiful articles on sound symbolism. In 1895, he describes the phenomenon of clustering as follows:

> "Every word, in so far as it is semantically expressive, may establish, by haphazard favoritism, a union between its meaning and any of its sounds, and then send forth this sound (or sounds) upon predatory expeditions into domains where the sound is a first a stranger and parasite. A slight emphasis punctures the placid function of a certain sound element, and the ripple extends, no one can say how far... No word may consider itself permanently exempt from the call to pay tribute to some congeneric expression, no matter how distant the semasiological cousinship; no obscure sound-element, eking out its dim life in a single obscure spot, may not at any moment find itself infused with the elixir of life until it bursts its confinement and spreads through the vocabulary a lusty brood of descendents... The signification of any word is arbitrarily attached to some sound element contained in it, and then cogeneric names are created by means of this infused, or we might say, irradiated, or inspired element."

The language of Bloomfield and von Humboldt gives a much better intuitive feel for the fundamental phonosemantic concepts than most of the literature written in the 20th Century, but it does not provide the solid empirical base required to either prove or disprove the claim that there is a regular synchronic correlation between the articulation of a phoneme and its semantics, nor does it offer a way to make practical use of such a correlation. In order for that to happen, we must find a means by which we can define the relevant parameters clearly enough that we can then quantify the relationships or lack thereof. Most 20th Century literature on the subject is devoted to forming such an empirical base.

2.2 Pre-War Phonosemantics – Major Trends in the 20th Century

2.2.1 Maurice Grammont

Grammont (1901) saw sound-meaning correspondences as the essence of poetry. These correspondences, though, are not in most cases purely onomatopoetic, purely imitative. He describes his intentions thus:

> "Quel est le son d'une idée abstraite ou d'un sentiment? Par quelles voyelles our par quelles consonnes le poète peut-il les peindre? La question même semble absurde. Elle ne l'est pas. Nous nous proposons précisément de montrer par une étude minutieuse des chefs-d'œvre de nos plus grands poètes qu'ils ont presque toujours cherché à établir un certain rapport entre les sons des mots dont ils se servaient et les idées qu'ils exprimaient, qu'ils ont essayé de les peindre, si abstraites fussent-elles, et que la poésie descriptive n'est pas une chose exceptionelle et à part, distincte de la poésie.
>
> On peut peindre une idée par des sons: chacun sait qu'on le fait en musique, et la poésie sans être de la musique, est, comme nous le verrons plus loin, dans une certaine mesure une musique; les voyelles son des sortes de notes. Notre cerveau continuellement associe et compare; il classe les idées, les met par groupes et range dans le même groupe des concepts purement intellectuels avec des impressions qui lui sont fourniers par l'ouïe, par la vue, par le goût, par l'odorat, par le toucher."

He observes that any ordinary French phrase can of course be rendered in any other language, but that an element of meaning becomes especially prevalent in poetry that makes it inaccessible to exact translation, and this he considers to be the contribution that sound is making to meaning. He therefore sees some utterances as more mimetic and therefore higher or better than others. However, he also finds phonosemantics not just to be a function of parole; rather the phonemes have meanings implicit in them. He argues at some length that the fact that a phoneme's meaning is very broad, does not in any way mean that it has no semantics at all: since there are so few phonemes, one would expect them to have a broad meaning. His book is divided into various 'ideas' – repetition, accumulation, sorrow, joy, irony, silence, smallness, etc.. Grammont provides examples from great poetry exhibiting each of these 'ideas' and shows how they are expressed with the same types of sounds in the poetry not only of France, but also of other countries.

2.2.2 Velemir Khlebnikov

Khlebnikov was a Russian futurist poet of the early 20th Century, frequently cited by Roman Jakobson. His verse consistent mostly of words of his own invention, something like Joyce's *Finnigan's Wake*. However, he also wrote purely linguistic works outlining the correlations he had observed between Russian phonemes and their meaning. He even produced a list of Russian phonemes followed by a brief semantic characterization of each. For example:

> v - the return of one point to another (a circular path)
> m - the breaking up of volume into infinitely small parts
> s - the departure of points from out of one immovable point
> z - the reflection of light from a mirror

2.2.3 Leonard Bloomfield

In 1909 and 1910, the better known Bloomfield – Leonard – worked on "A Semasiological

Differentiation in Germanic Secondary Ablaut" in which he writes:

> "We have seen how an old ablaut base – a strong verb IE. *s*leng*- Germanic *s*linken* E. *slink*, let us say – has given rise to a number of words – as E. *slink* (strong verb): dial. *slank* (weak verb): dial. *slunk* (weak verb)... But it is natural, if not inevitable that such words should become semasiologically differentiated. E. *slink* 'sneak': dial. *slank* 'go about in a listless fashion': dial. *slunk* 'wade through a mire' are examples. What has determined the direction of this differentiation in meaning? In many cases, the old laws of derivation must have been decisive... But one cannot so explain the meanings of *slink : slank : slunk*, nor indeed the great majority of such modern Germanic word groups: another force has been at work. This force is the old inherent Germanic sense for vowel pitch... If a word containing some sound or noise contains a high pitched vowel like i, it strikes us as implying a high pitch in the sound or noise spoken of; a word with a low vowel like u implies low pitch in what it stands for... Its far reaching effects on our vocabulary are surprising. It has affected words not only descriptive of sound like E *screech, boom*... but also their more remote connotative effects. A high tone implies not only shrillness, but also fineness, sharpness, keenness; a low tone not only rumbling noise, but also bluntness, dulness, clumsiness; a full open sound like a, not only loudness, but also largeness, openness, fulness..."
>
> Nor must the subjective importance of the various mouth positions that created the various vowel sounds be forgotten: the narrow contraction of i, the wide opening of a, the back of the mouth tongue position of u are as important as the effect of these vowels on the ear of the hearer."

He then goes on to itemize all the major roots in Germanic in order of the consonant sounds: first /p-p/ (N. pipla, pupla; E. peep, pip, pipple; etc.), then /p-f/ (S. piff, paff, puff; E. piff, piffle, piffer, paffle, puff; etc.) and so on, and he demonstrates that the correlations he noted hold throughout the entire vocabulary of Germanic. Bloomfield's view regarding the importance of sound meaning was strong enough that he could write:

> "Since in human speech, different sounds have different meaning, to study the coordination of certain sounds with certain meanings is to study language."

Here for the first time we see the kind of data a modern scientist needs to verify a phenomenon and put it to use. Bloomfield's list of Germanic roots is as close to complete as he could make it. It therefore can't be said that he picked out certain words or phoneme combinations that supported his case and conveniently left out the others. He thereby made it possible for the first time to quantify the correlation, and this is the first step toward broadening the discussion from philosophy and speculation to real science.

2.2.4 Psycholinguistic Experiments – Sapir et al.

Sapir began as a conventionalist who then converted to a naturalist position. He was one of the first to query native speaker intuitions about nonsense or foreign words in order to demonstrate that there was a productive correlation between sound and meaning. He described the purpose of his inquiry thus:

> "We may legitimately ask if there are, in the speech of a considerable number of

> normal individuals, certain preferential tendencies to expressive symbolism not only in the field of speech dynamics (stress, pitch and varying quantities), but also in the field of phonetic material as ordinarily understood.... The main object of the study is to ascertain if there tends to be a feeling of the symbolic magnitude value of certain differences in vowels and consonants, regardless of the particular associations due to the presence of these vowels and consonants in meaningful words in the language of the speaker."

Sapir then asked about 500 subjects of all ages 60 questions of the following type: "The word 'mal' and the word 'mil' both mean 'table' in some language. Which type of table is bigger – 'mal' or 'mil'?" 83% of the children and 96% of adults consistently found 'i' to be smaller and 'a' to be bigger. Sapir did not, however, believe the feeling-tone that exists in words to be inherent to them, but characterized it rather as a 'sentimental growth on the word's true body'.

By testing the intuitions of English-speaking subjects, Newman also showed that English vowels could be placed on a scale of small to large, and that the size associated with each vowel reflected the size of the oral cavity during articulation. However in actually analyzing 500 extant English words, he found no correlation between vowels and size. Chastaing (1962) ran 12 types of test all of which showed that people intuitively associate clarity with high front vowels and obscurity with low back vowels.

Numerous other tests of this nature have been conducted. Tsuru (1934) had native English speakers guess the meanings of 36 Japanese antonyms, and found that they guessed correctly much more than 50% of the time. Allport (1935) translated the Japanese words into Hungarian and repeated the experiment in order to filter out the possibility that Tsuru had subconsciously chosen words which bore some resemblance to related forms in English. The results were the same for Hungarian as for Japanese. Wissemann (1954) showed that when asked to invent words for noises which they heard, German speakers tended to associate certain phonemes with certain sounds more than with others. Fischer-Jørgensen (1967) begins his paper optimistically: "It is now generally accepted that speech sounds should not only be described in articulatory and in acoustic, but also in perceptual terms." He interviewed 150-200 students in various experiments asking them to classify Danish vowels, and found that people intuitively classify vowels as having brightness and hue, but not saturation.

Others who undertook experiments similar to these include Köhler (1947), Brown, Black and Horowitz (1955), Maltzmann, Morrisett and Brooks (1956), Brackbill, Little (1957), Miron (1961), Weiss (1964), Peterfalvi (1970)

2.2.5 Otto Jespersen

Jespersen was perhaps the most adamant phonosemanticist prior to the Second World War. He wrote, "Is there really much more logic in the opposite extreme which denies any kind of sound symbolism (apart from the small class of evident echoisms and 'onomatopoeia') and sees in our words only a collection of accidental and irrational associations of sound and meaning? ...There is no denying that there are words which we feel instinctively to be adequate to express the ideas they stand for." Jespersen saw phonosemantics not only as a force which was active in the inception of language, but as a productive synchronic influence in language evolution and use. "Sound symbolism, we may say, makes some words more fit to survive."

2.2.6 Richard Paget

Bloomfield suggested that both the phonetics and the articulation of a speech sound contributed to

its meaning. In chapters VII, VIII and IX of his book, Sir Richard Paget (1930) argues that articulation is in fact more influential than sound in this regard. He writes:

> "Observations of the actual resonance changes which occur in the production of the vowels and consonants show that we accept as identical sounds which are widely different *provided* they are made of similar postures or gestures of the organs of articulation."

He lists a number of words in several languages demonstrating his position, but by no means lists them all. In the present work, we will also be correlating semantics with articulation rather than with acoustics, not because we necessarily agree with Paget's position, but because articulations are much easier to nail down and classify than sounds.

2.2.7 African Ideophones – Doke et al.

Doke was a scholar of Bantu languages, and introduced the notion of the 'ideophone', which he called a 'radical' and which developed into a whole body of literature in African linguistics. Apart from the work of Roger Williams Wescott, there is little sharing of ideas between the ideophone literature and that of linguistic iconism in general.

The ideophones are a grammatical classification of words whose function is onomatopoetic. These words are not limited to sound-imitation, but extend to people, manners, actions, states, colors and so forth. Doke defines the 'radical' as "a word, often onomatopoetic, which describes a predicate or qualificative in respect to manner colour, sound, state or action." He distinguished it from the adverb which describes in respect to "manner, place or time". The radicals, he says, are "found in great numbers" in Bantu and pattern differently syntactically and morphologically from other parts of speech.

William Samarin did a significant amount of ideophone research. He was particularly concerned with methods of identifying the specific meaning of an ideophone in a way that is comprehensible to non-native Bantu speakers. This proves to be a non-trivial task requiring very sophisticated lexicographic methods. Other major researchers in this field include Awolyale, Childs, Maduka, Mamphwe, Mphande and Westermann.

2.2.8 John Rupert Firth

Although Firth coined the term 'phonestheme' and published lists of them, he felt that one had to be careful about overgeneralizing phonosematic effects. He found no evidence for Humboldt's 'impressions on the ear resembling the effect of the object on the mind'. Like Sapir, he felt that speech sounds were meaning-bearing, but their meaning was not inherent to them. Rather the phonesthemes were a result of what he called 'phonetic habit', 'an attunement of the nervous system'.

2.3 Structuralism – Saussure

Although the contingency for a synchronic sound-meaning relationship prior to the war was in general stronger than it has been for most of the latter half of the 20th Century, the field was by no means unified. The most celebrated opponent of the phonosemantic hypothesis is, of course, Ferdinand de Saussure (1916). In his chapter entitled "Nature of the Linguistic Sign:, the second chapter heading reads unabashedly:

First principle: the sign is arbitrary

He then continues as follows:

> "The link between signal and signification is arbitrary. Since we are treating a sign as the combinations in which a signal is associated with a signification, we can express this more simply as: *the linguistic sign is arbitrary.* There is no internal connexion between the idea 'sister' and the French sequence of sounds s-ö-r which acts as its signal. The same idea might well be represented by any other sequence. of sounds. This is demonstrated by differences between languages, and even by the existence of different languages... The principle stated above is the organizing principle for the whole of linguistics...
>
> The arbitrary nature of the linguistic sign was adduced above as a reason for conceding the theoretical possibility for linguistic changes. But more detailed consideration reveals that this very same feature tends to protect a language against any attempt to change it."

Again, Saussure asserts the Conventionalist Overgeneralization, based on the presumption that there is only one aspect of word meaning. The argument runs that if there were any connection whatsoever between sound and meaning, there would be no possibility for linguistic change and we would all be speaking the same language. However, if Saussure's 'sign' is understood to mean something like C. S. Peirce's 'symbol' abstracted away from its iconic and indexical qualities, then we agree with him. The process of reference, the association between concepts and phoneme sequences is indeed essentially arbitrary. We will be providing some rather strong evidence to that effect, namely that those words with the most narrow and rigid referents – i.e. those referents on which people agree most – are also those words which display the weakest sound-meaning correlation. The more poetic and vague a word's referent is, the more clearly the phonosemantic effect can be observed. Nouns display the effect much more weakly than verbs or adjectives and concrete nouns display the effect least of all. We find rather that there is an element of meaning in words which is essentially iconic in Peirce's sense of the term, and that it is in this domain that the phonosemantic effect holds sway.

It's also curious that de Saussure himself made quite hobby of phonosemantics. Thaïs Morgan writes in the introduction to the English translation of Genette (1976):

> "Yet even Saussure, the founder of structural linguistics, who introduced the notion of "arbitrariness" of the sign or its relative freedom from ties to the phenomenal world, also enthusiastically engaged in mimologics. Intrigued by what he called 'anagrams' and 'paragrams', Saussure filled many notebooks with eponymic analyses of Vedic and Homeric verses and inscriptions, discovering the names of

ancient gods and heroes mysteriously concealed in letters and sounds. *Saussure's notebooks are extensively cited in Jean Starobinsky *Words upon Words: The Anagrams of Ferdinand Saussure*, trans Olivia Emmet (New Haven, Yale University Press, 1979)"

2.4 Postwar Phonosemantics

Wheras many linguists prior to the rise of generative grammar held that some level of linguistic iconism was active in language, linguistic iconists were in a decided minority through the last four decades of the 20th Century. The present author is aware of several works in phonosemantics whose authors suppressed even their informal dissemination for fear that this would have a negative effect on their professional life. When the *Linguistic Iconism Association* was formed in 1998, more than half its members wished to have their connection with the group kept secret. Issues such as these pose difficulties to someone who is trying to present a complete account of the field. And like in any branch of scientific inquiry following the War, major Eastern European works such as those of Zhuravlev and Voronin were and still are sadly nearly unknown in the West, due to the imperviousness at the time of the Iron Curtain. Nonetheless, there were quite a few people who carried on research, who developed the field significantly in this period and who published in the West.

2.4.1 Dwight Bolinger

Dwight Bolinger of Harvard University was the primary proponent of phonosemantics through the late 40's and the 50's. In 1949, he published "The Sign is Not Arbitrary". In 1950, he published his most famous work on the subject, and one which formed the foundation on which many subsequent researchers (including John Lawler, Richard Rhodes and Keith McCune) based their theories: "Rime, Assonance and Morpheme Analysis". Bolinger approached the field through an inquiry into the nature and status of the morpheme. He concluded that morphemes cannot be defined as the minimal meaning-bearing units, in part because 'meaning' is so ill-defined, and in part because there are obvious situations in which smaller units are meaning-bearing. He cites polyphonemic phonesthemes as the primary example. He writes, for example:

> " We need not limit ourselves to pairs, but may look for larger patterns. One tempting example is the cross-patterning of /gl/ 'phenomena of light' and /fl/ 'phenomena of movement' with (1) /itr/ 'internittent', (2) /ow/ 'steady' and (3) /ur/ 'intense': glitter<->flitter, glow<->flow, glare<->flare... as for the terminal 'morphemes' in the above words, we find (1) evidenced also in titter, jitter, litter, iterate; (2) in slow, grow and tow and (3) in blare, stare and tear."

Bolinger argued that one should regard at least the assonance and the rime of a monosyllabic root as 'sub-morphemes', on the basis that virtually all English assonances and rimes were found in the context of much narrower meanings than one would expect statistically.

2.4.2 Ivan Fónagy

Fónagy (1963) correlates phonemes with metaphors.

> "Jeder Laut hat eine eigene Klangfarbe, die Vokale sind hell oder dunkel. Die Konsonante scheinen eine gewisse Konsistenz zu haben, sind hart oder weich, werden sogar in gewissen Fällen als feucht empfunden, der Einsatz eines Sonanten ist fest oder leise resp. weich, manche Engelaute sind schärfer als andere, auch die Silbe kann scharf geschnitten sein. Der Ton ist hoch oder niedrig, usw.."

Fónagy does not see 'wissenschaftliche Metapher' as having an aesthetic role, but as concerning only the content of the word. In his treatise of 123 pages, he outlines the meanings that have been given phonemes in the grammars of various languages throughout history. For example, nasal and velarized vowels are quite generally considered 'dark', front vowels as 'fine' and 'high'. Unvoiced

stops have been considered ‘thin’ by European linguists, whereas the fricatives were labelled ‘raw’ and ‘hairy’ by the Greeks. According to Hungarian linguist Révai, /g/ is hard and raw before /a/, /o/ and /u/, but softer before /e/ and /i/. Dionysius Halikarnasseus found /l/ to be the softest and sweetest of the semi-vowels, as opposed to the sharper and more noble /r/. Leibniz says that those children who do not like the sharpness of the /r/ therefore replace it with the /l/. Palatalization makes things moister according to the linguists of many countries. Fónagy collected similar statements from the literature expressing the opinion that prosodic elements also have iconic meaning.

Fónagy viewed these ‘metaphors’ as having a physiological basis. Lower pitched sounds are in general considered more masculine, because the male voice is deeper. The unvoiced stops are articulated with more tension than their voiced counterparts, and therefore are considered ‘harder’. He cited a study done by Hungarian researchers that asked deaf children how they experienced various phonemes subjectively. They responded much the way hearing children do, providing evidence that phonosemantics has an articulatory rather than an acoustic base. Finally, Fónagy argues that these metaphors very much influence our thought processes, including the evolution of science.

2.4.3 Hans Marchand

Marchand provided the first extensive list of English phonesthemes. He found that the meaning of a sound or sound sequence was also dependent on its position in the syllable. Marchand attributed meanings to even shorter sequences than Bloomfield or Bolinger were prepared to do. He wrote, for example, that “/l/ at the end of a word symbolizes prolongation, continuation” or “nasals at the end of a word express continuous vibrating sounds.” Each such characterization was followed by a list of examples. Although Marchand was perhaps at the time the most cited of those who did extensive surveys of sound meaning correlations in the vocabulary of a given language, there are and were over a hundred others whose work was in some cases as extensive or even more so.[2]

Commentary: If it is indeed the case, as we suggest that the Phonosemantic Hypothesis holds, then we would anticipate this evolution within the field – namely that meaning would over time be associated with shorter and shorter strings of phonemes. Just as the meaning of a sentence is narrower than that of a phrase or single word appearing within that sentence, so the meaning of a string of phonemes is narrower than the meaning of any one of the phonemes which appears in that string. If only 20-30 phonemes must be combinable in such a way that they can bear the semantic weight for the iconic aspect of the entire language, then one might anticipate that these meanings would be very broad indeed, very abstract and therefore hard to see or distinguish at first. Narrower meanings associated with longer phoneme strings would therefore be the first to be observed. As phonesthemes for longer strings were analyzed ever more closely, it would become apparent that the narrower meaning associated with a phoneme pair could be reanalyzed into a combination of more general meanings associated with each of the two individual phonemes.

For instance, at first it is observed that /gl/ is frequently associated with reflected light, and /fl/ is associated with direct light. /bl/ is often associated with blindness, or absence of light, and /cl/ is associated with colors... Only then do you see that all of these phonesthemes lie in the semantic domain of ‘light’ and all of them also contain an /l/... so you hypothesize that it’s the /l/ that contributes the ‘light’ to the equation, and the variations that one observes among the phonesthemes between the inflections of light are functions of the phonemes other than /l/. /b/ blocks the light (and not only light). /g/ hides the source of the light (and not only light). /f/ displays the light (and not only light), and /c/ classifies the light (and not only light). (Light associated with /s/ on the other hand almost

always concerns 'seeing' and these words never contain /l/... /l/ in conjunction with /s/ turns to liquid and is slippery. (If a /p/ intervenes, the liquid splays or splashes out from a single point or source.)) If you really itemize all the monosyllabic words in English which concern light, a large percentage of them contain /l/ in conjunction with specific other phonemes each of which affects the 'light' of /l/ in a specific way. Of course, as not all words concerning light contain /l/, so by no means all words containing /l/ concern light, so light is only one of many 'senses' of /l/... Liquid is another 'sense' of /l/. What underlies or is common to all of these senses of /l/ is not so easy to discern. It takes time and patience. Pursuing this method of semantic analysis even further, one finds that phonetic features also are meaning-bearing.

2.4.4 Suitbert Ertel

Ertel(1972) opens his work with the observation that phonosemantics cannot be easily combined with Saussurian structuralism or with Chomskian generativism, for the reason that both of these view language as "ein von der psychologischen Realität abtrennbares Geistprodukt,... ein überindividuell objektiveres Gebilde oder als autonomes generatives System, das der mentalen Organization des individuellen Menschen lediglich als Vehikel bedarf." In other words, in his view, one of the difficulties that researchers have always had in accepting the Phonosemantic Hypothesis, or even a much weaker version of it, is that its acceptance requires a very different view of language than is generally accepted – a view in which semantics cannot be abstracted away from language itself, and in which language as we know it cannot be abstracted away from man.

For some reason, the notion that the form and content of language can be so deeply intertwined, that as the form varies, so content must also vary, is a very hard pill for many linguists to swallow. It is similar to the observation in quantum electrodynamics that the observer cannot be meaningfully separated from the observed.

Ertel describes the purpose of his research as follows:

> "Wenn -wie gezeigt worden war- zwischen der "Ebene" der Phonetik under der "Ebene" der Semantik allgemeinqualitative, also psychologischen Vermittlungen bestehen, die universell in Erscheinung treten, dann müßten sich diese erst recht an spezifischeren und handlungsnäheren phonetisch-semantischen Kovariationen aufweisen lassen... Wenn auch für die Lautgebärde über das selektive Demonstrieren einselsprachlicher Beispiele hinaus ein für allen Sprachen gültiges breites Spektrum an Verflechtunge zwischen Phonetik und Semantik statistisch aufweisbar wäre, müßte man Grund haben, die radikale Trennung der beiden Ebenen aufzugeben."

And that's just what he proceeded to do. He selected four fairly narrow semantic domains: words for sounds, words of motion, words for actions performed with the mouth, and words for sound produced by animals. He then selected German 175 words in these 4 semantic classes, and had them translated into 36 languages covering all the major language families of the world. Finally he counted the frequency of the phonemes which occurred in each of the verbs and found that certain types of sounds occured much more frequently with certain verbs than one would anticipate if the relationship between sound and meaning were purely arbitrary. Gargling is expressed in a large percentage of verbs with velar sounds, spitting with labials and unvoiced plosives and so on and so forth.

Because Ertel's crosslinguistic tests were applied across a very broad range of languages, and not just to the Germanic languages, as in Bloomfield's tests, they suggest that sound-meanings are not

merely side-effects of linguistic change, but that they are synchronically productive in modern languages and on some level universal. Three of the four classes of verbs that Ertel researched focussed on sounds or on verbs of the mouth – classes which one would expect to be especially strongly influenced by mimetics. The present study includes a much broader range of words and semantic classes than does Ertel's, but unlike Ertel's work, it is also limited primarily to English.

2.4.5 Gérard Genette

To the author's knowledge, there has only ever been published one full length history of phonosemantics – Genette (1976). Fortunately it is also a magnificent work. In 450 pages, Genette colorfully details the evolution of the linguistic iconism both among linguists and poets, in syntax, morphology and phonology. He also discusses a number of related issues – the preoccupation with orthography and language origins, the relationship between phonosemantics and etymology, the sociology of the field, and so forth. Unfortunately, though Genette's work is a wonderful tribute to the field of phonosemantics, it has also been almost totally overlooked in the linguistics literature.

2.4.6 Roman Jakobson

Jakobson was probably the most influential phonosemanticist of the latter half of the 20th Century. Like von Humboldt, Maurice Bloomfield and Ertel, Jakobson had a very strong intuition for the wholeness of language. He felt that many distinctions, including the distinction between form and meaning drawn by structuralists, generativists (whom he considered to be descendents of the structuralists) and others were not entirely valid. He tried in many ways to show that this was the case. He was unlike most of the other linguists reviewed in this short history of the field who wrote one or two major works on the subject and then moved on to other things. With Jakobson, the interrelatedness of form and content was a theme that ran through all of his later work – to him it was a very central theme. For example, his essay entitled 'Quest for the Essence of Language' concerned itself with linguistic iconism. His largest work on the subject *The Sound Shape of Language* co-authored with Linda Waugh was in some ways his response to Chomsky and Halle's *Sound Pattern of English*, their account of what they felt had been overlooked in generative phonology. He did not produce volumes of well organized empirical data in the manner of Bloomfield or Marchand, though he very much respected researchers of this type. Rather he was a philospher who tended to appeal primarily to his readers' reason and intuitions.

Jakobson's view on the interrelatedness of sound and meaning was strongly influenced by his studies in poetics. He studied poetry throughout his life, and especially in later years, he wrote numerous analyses of poems seeking to get at what it was about the interrelations and juxtapositions of sound that gave the poem its powerful emotional effect. Jakobson's thought resembled Grammont's in that to him, poetry existed when a writer was being attentive to the effect of form on content. Several others have taken up Jakobson's thread of poetic analysis and expanded on it considerably. These include John Robert Ross and Amy Mandelaker. Also Masako Hiraga has published voluminously in the poetics of sound.

Another very powerful influence on Jakobson was that of the semiologist C.S. Peirce, whom Jakobson discovered after he came to the States and wrote of in the highest terms, calling him, for example, "the most universal and inventive of American thinkers". Peirce distinguished three types or levels of signs:

> Level 1 or Firstness: Iconic. On this level there is no distinction between what a thing is and what it represents.
> Level 2 or Secondness: Indexical. On this level, a sign by its nature points to

> something else, as smoke is an index of fire. But with Peirce, secondness runs much deeper than merely this. Secondness is quite generally the introduction of the 'other', any form of binarity whatsoever.
> Level 3 or Thirdness: Symbolic. It is only on this level that real arbitrariness in the Saussurian sense is introduced.

Jakobson writes, "The iconic and indexical constituents of verbal systems have too often remained underestimated." Frequently researchers who quote Peirce think in terms of some utterances as being more iconic, others more indexical and others more symbolic. Rather Peirce would say that all of these levels are continually present and exerting influence in everything that confronts us, linguistic or otherwise. And Jakobson clearly thought the same, at least as it pertained to language, for he writes that this "has vital consequences for linguistic theory and praxis". In a sense then, Peirce provided Jakobson with the key that he could use to resolve this paradox between the obvious arbitrariness of the sign that Saussure noted on the one hand, and the very general existence of phonesthemes on the other. He did this by distinguishing different levels of sign, of recognizing that there is more than the obvious thirdness of word semantics. There is also secondness and firstness. And arbitrariness and iconism happen on different levels. Furthermore he noted in "Quest for the Essence of Language" that Greenberg's Universals had an pronounced iconic quality about them, and went on to discuss this in reference to syntax and morphology.

Jakobson distinguished between a direct, right hemisphere relation between sound and meaning and 'double articulation', or an indirect, left hemisphere relationship, such as one finds in poetry, mythology, sound symbolism and synesthesia. In the present work we will not refer to double articulation, but rather view indirect iconism as a side effect of clustering.

Jakobson was also typical of linguists who do not see form to be distinct from content in language (present author included) in that he could not like the structuralists and generativists see parole as so absolutely secondary to langue. To Jakobson, langue was as much influenced by parole as the converse. While the generativists were emphasizing innateness, he emphasized pragmatics – language exists for a reason, and that lies in the domain of parole more than langue.

It is also typical of linguists like Jakobson (again present author included) who deny the complete arbitrariness of the sign that they do not hold that it is possible to devise an abstract representation of language separate from language itself any more than the 'meaning' of a piece of music can be represented abstracted away from the notes it contains or the instrument on which it is played.

2.4.7 Roger Williams Wescott

Wescott was probably the most prolific of researchers on the subject of linguistic iconism during the 1960's and 1970's. He published many articles about specific correlations between sound and meaning that he had observed in English and in African languages, primarily Bini and Ibo. He remains perhaps the only researcher who united the African tradition of linguistic iconism initiated by Doke with the Western tradition of sound symbolism whose most outspoken proponents were Bolinger and Jakobson. Wescott is also a poet and an anthropologist. His research often goes into language origins, the relationship between animal communication and human speech and orthographic iconism. Dwight Bolinger in the introduction of *Sound and Sense* describes him as having the "most irrepressible imagination to be found among serious scholars," and adds that he was careful to use the word 'serious', for Wescott's research is indeed always founded on a very solid and extensive empirical base.

2.4.8 Richard Rhodes & John Lawler

This is one of the most cited works in phonosemantics in the last decade. Rhodes and Lawler begin by observing that for example, the Ojibwe word 'mdwesjiged' was cited by most speakers to mean only 'ring the church bells', when in fact, it was used in many contexts all of which could be characterized as 'be/make a sound at a distance'. When pressed on this point, Ojibwe speakers would agree that the verb was in fact used quite generally in these contexts. Rhodes and Lawler conclude that these other more general senses of 'sound at a distance' are derived by 'athematic metaphor' from 'ring the church bells'. They then point out several instances in both Ojibwe and English in which the true semantics of a word as it is used in practice is not fully derivable from the sum of its concrete 'senses'. They show this initially of English 'ring' which works much like Ojibwe 'mdwesjiged'. This more general meaning, they suggest, can be derived from combining the phonestheme or submorpheme meanings of the assonances and rimes of these words. The assonance, they argue serves as the modifier, and the rime serves as the head.

Commentary: In the present work, we take these observations one fairly radical step further, a step which has actually been taken time and again throughout the history of the field. Rhodes and Lawler see the basic senses of a word as the most fundamental, and on the level of parole, they undoubtedly are. Speakers are only consciously aware of the referents of a word, and will list the most salient when asked for the word's meaning. From this most basic sense, the more general usages or functions or senses of a word are viewed as spreading outward by means of comparison, a process they describe as 'athematic metaphor' by analogy with Lakoff and Johnson's 'thematic metaphors'. Indeed research presented in this work substantiates their findings that invented definitions for nonsense words often spring from comparisons with similar words that actually do exist in the language.

However, since this more general meaning such as 'sound at a distance' can also be fully analyzed in terms of the combined meanings of the phonesthemes which compose the word, we suggest that on the level of langue, the precedences are inverted – that is, the iconic meaning is most profitably viewed as the underlying substrate on which the senses are superimposed. In the case of 'ring', then, the underlying iconic meaning is formed by the phonesthemes 'r-' and '-ing' (which we find to be further decomposable into individual phonemes), and the specific referents to which this is applied are then secondary. Many works in phonosemantics view some words as fundamentally more iconic than others, some languages as more iconic than others. We will argue that in fact linguistic iconism is equally pervasive in all words in all languages. What accounts for the apparent differences in iconic usage in words is the rigidity or concreteness of its most common referents. The more specific the referent, the less room there is for the underlying iconic meaning to shine through.

We view Peircean level 2 as the notion that underlies structuralism, namely the level on which the linguistic sign has a purely discriminative function. Thus we view word semantics as having iconic 'content' viewed through the structuralist or classificatory level 2 backbone or prism. The level 3 referent – what by many is viewed as the only aspect of word semantics – we view essentially as a phenomenon on the level of function, parole.[3]

2.4.9 Keith McCune

The most detailed and complete single work in the field of phonosemantics is Keith McCune's dissertation. As far as we are aware, McCune demonstrates for the first time in history that virtually every word in an entire language – Indonesian – has an iconic component of meaning. He follows the tradition of Bolinger, Rhodes and Lawler, in viewing the basic definition of a word to be extended to other meanings by various semantic processes, specifically what he calls subgroups, metaphors and Levi extensions, and most of the dissertation is devoted to the study of these

processes. Although he analyzes all the Indonesian roots into assonances and rimes, he suggests that these are in turn possibly further analyzable into individual phonemes, though he does not attempt such an analysis.

The fact that McCune analyzes the entire vocabulary of a language is very important in our view. Arguments of the form, "phoneme X correlates with semantic domain Y and here are some examples" are not in the least compelling. Without discovering a pattern that runs through all the words in a well-defined semantic domain, nothing has been demonstrated at all. In order to demonstrate that the phonosemantic effect has any generality, one has to be in a position to quantify the phenomenon, to say "X% of words with phonological trait A in this language fall within semantic class B."

2.4.10 Yakov Malkiel

One of the most common and obvious arguments for the complete arbitrariness of the sign is that regular sound change would be impossible if it were subject to the immense constraints of linguistic iconism. If Latin /p/s always appear as Germanic /f/s, how can it possibly be maintained that /p/ means one thing and /f/ another, and that this distinction is largely based on articulation and therefore essentially universal or cross-linguistic? Malkiel addressed this issue in a number of articles which reappeared in a composite volume in 1990. He argued that although there is regular sound change, a lot is going on behind the scenes in the process of sound change that is not generally acknowledged. For example, often when languages undergo dramatic sound shifts, much of the vocabulary also undergoes semantic shifts allowing the new forms to appear in contexts that they could not previously appear in and which prohibit them from appearing in contexts in which they were formerly permitted. In some cases words fall out of the vocabulary whose phonological structure is no longer appropriate to its meaning, and new forms are picked up through various forms of analogy, metaphor, etc. from words which exist and have more appropriate phonological structures. Robin Allott (1995) also points out that without even taking this into consideration, a large portion of the basic vocabulary in English is of either unknown, questionable or onomatopoetic origin.

Comment: We observe as well that the examples that are most frequently cited for Grimm's Law and other famous diachronic sound shifts are precisely those concrete nouns which are most impervious to phonosemantics. Verbs of motion, adjectives of emotion and the like are rarely cited as evidence for the regularity of sound changes.

2.5 Other Researchers

We have here attempted to provide a good sampling of the various approaches that have been taken to the subject and to outline the thoughts of those researchers whose work is known best. However, a glance at the bibliography will convince the reader that there are a great many others who have also contributed to the field – often in equally substantial ways. Many of them had developed the ideas independently before they were formally published, and many did voluminous amounts of analysis which form the underpinnings on which the phonosemantic claims are based. With few exceptions, it was only in the 1990's that women really came to the fore in the field. Major works produced in the 90's include Janice Nuckoll's phonosemantic account of Quechua; Kakehi Hisao, Lawrence Schourup and Ikuhiro Tamori's voluminous *Dictionary of Iconic Expressions in Japanese*; Leanna Hinton, Johanna Nichols and John J. Ohala (eds.) proceedings on the Berkeley conference in sound symbolism; Robin Allott's motor theory of language; Arie Poldervaart's Uto-Aztecan data; H. Fukuda's *Flip, Slither, Bang: Japanese Sound in Action*; Simone Raffaele's *Iconicity in Language*; Reuven Tsur's *What Makes Sound Patterns Expressive?*; Earl R. Anderson's wonderful overview of the field *A Grammar of Iconism*, and a popularized account of the field by the present author entitled *Gods of the Word*. In addition, many works have come out on the Internet which have not been published formally. The *Linguistic Iconism Association* was formed in early 1998, and now has about 150 members.