

The “dimensionality principle” and semiotic analysis

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Introductory remarks

As is well known, John Locke (1690) introduced the formal study of signs into philosophy because he anticipated that it would allow philosophers to understand the interconnection between representation and knowledge. But the task he laid out for philosophers remained virtually unnoticed until Charles Peirce (1931–58) took up Locke’s challenge seriously, arguing persuasively throughout his writings that the distinguishing characteristic of the human species is, indeed, its extraordinary ability to *know* the world in the form and contents of signs. This ability is the reason why, over time, humankind has come to be regulated not by force of natural selection, but by “force of history,” i.e. by the accumulation of knowledge that previous generations have captured in the form of signs and passed on in cultural settings.

Much important work on signs using Peircean theory has been conducted in the twentieth century. But what is lacking in my view from the relevant literature is a general working principle that can synthesize the many, yet still scattered, insights into human representational systems that Peircean theory has produced throughout the century. The purpose of this essay is to draft a preliminary outline of such a principle — which will be called the *dimensionality principle* — as a target for discussion. Clearly, it will have to be assessed for viability, applied to actual analytical tasks, and, if found to be practicable, modified, adapted, and elaborated in suitable ways.

Semiosis vs. representation

One of the primary objectives of semiotics is to understand semiosis and the knowledge-making *activity* it allows all human beings to carry out. This activity is known as *representation*. It is characterized by the deliberate use of signs to probe, classify, and hence *know* the world. *Semiosis* is the neurobiological capacity itself that underlies the production and comprehension of signs, from simple physiological signals to those which reveal a highly complex symbolism (e.g. Sebeok 1994). The activity of using signs to capture, portray, simulate, or relay impressions, sensations, perceptions, or ideas that are deemed to be knowable and memorable is a truly remarkable trait of the human species.

The difference, but intrinsic interconnection, between semiosis and representation can be seen in early childhood behaviors. When an infant comes into contact with an object, his/her first reaction is to explore it with the senses, i.e. to handle it, taste it, smell it, listen to any sounds it makes, and visually observe its features. This exploratory phase of knowing, or cognizing, an object can therefore be called sensory cognizing, because the child is using the sensory apparatus to cognize the object in terms of how it feels, tastes, smells, etc. Such sensory units of knowing apparently allow the child to recognize the same object subsequently without having to examine it over again with his/her sensory system. Now, as the infant grows, he/she starts to engage more and more in semiotic behavior that clearly transcends this sensory cognizing phase; i.e. he/she starts to point to the object and/or imitate the sounds it makes. This behavior is independent of cultural conditioning; it comes with having a body and a brain. It consists in the ability to imitate the sounds an object makes with the vocal cords and to indicate its presence with the index finger. At that point in the child’s development, the object starts to assume a new semiotic form of existence; it has, in effect, been transferred to the physical strategy itself used by the child to imitate its sound features or indicate its presence. This strategy produces the most basic type of sign which, as Charles Morris (1938, 1946) suggested, allows the child from that point on to replace the sign for the object. As is well known, this replacement pattern is known psychologically as displacement. This is the ability of the human mind to conjure up the things to which signs refer even though they are not physically present for the senses to cognize or recognize. The displacement property of signs endows the

developing infant to think about the world beyond the stimulus-response realm to which most other species are constrained, and thus to reflect upon it at any time and in any situation whatsoever. Now, as the child grows, he/she becomes increasingly more able to use signs to represent the world in a displaced manner. The word represent means, literally, “to present again,” i.e. to present some referent again in the sign.

The instant children start to represent the world with signs, they make a vital psychosocial connection between their developing bodies and conscious thoughts to that world. To put it figuratively, signs constitute the “representational glue” that interconnects their body, their mind, and the world around them in a holistic fashion. Moreover, once the child discovers that signs are effective tools for thinking, planning, and negotiating meaning with others in certain situations, he/she gains access to the knowledge domain of his/her culture. At first, the child will compare his/her own attempts at representation against the signs he/she is exposed to in specific contexts. But through protracted usage, the signs acquired in such contexts will become cognitively dominant in the child, and eventually mediate and regulate her/his thoughts, actions, and behaviors. The concept of dimensionality is intended to permit an investigation in Peircean terms of this very interconnection among the body, which is a firstness dimension anchored in the realm of sensory and emotional experience, the mind, which is a secondness dimension anchored in displacement and reflective consciousness, and culture, which is a thirdness dimension anchored in the representational systems that the child will acquire in his/her social ambiance. The basic premise underlying the dimensionality principle is that these three dimensions are coactive, i.e. intrinsically intertwined in the individual human being’s ability to produce meanings with, or extract meaning from, all kinds of representational systems (language, mathematics, the arts, etc.).

Knowledge and representation

In actual fact, what I am calling here the dimensionality principle has been an implicit notion in virtually all work on representation, from ancient philosophical writings to recent research in biosemiotics (Sebeok 1994, Danesi 1997). Indeed, it can be inferred already in the Aristotelian idea that the sign has a triadic nature, entailing:

1. the physical sign itself (e.g. the sounds that comprise a word);

2. the sign’s referent (the entity to which the sign refers and thus calls attention);
3. the meaning that results when the sign and the referent are linked together.

This theory of the sign, and more generally of representation, has remained intact to this day. The contribution of contemporary semiotics has been primarily in explicating the nature of the structural and psychological relations among these three dimensions of representational systems. One of Peirce’s most important contributions to the theory of the sign, for instance, was to argue that the meaning that is created by a sign is really a sign itself, or as he called it, an interpretant of that meaning. The interpretant encompasses the specific designations, emotions, feelings, ideas, etc. that the sign evokes for a person at a certain point in time. As Peirce (1931–58, vol. 2:228) put it: “A sign addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign.”

What stands out prominently from most theoretical work on the sign is the fact that there is what I have called above a coaction among these three dimensions. It is indeed impossible to think of a word like *cat* (a vocal sign made up of the phonemes /kæt/), without thinking at the same time of the type of mammal to which it refers (the referent), and without experiencing the personal and social meaning(s) that such a mammal entails (the interpretants).

This representational coaction undergirds how we extract meaning from a sign. As a case-in-point, consider the word *red*. This is: (1) a verbal sign made up of the phonemes /red/; (2) standing for a color phenomenon that can be described in purely physical (denotative) terms as a gradation of approximately 630 to 750 nanometers on the long-wave end of the visible spectrum (the referent); and (3) evoking an array of specific psychosocial meanings in particular users of the sign (the interpretants). Knowing this color category entails a coaction of these three dimensions in the sign-user’s mind. The word *red* evokes a specific color referent, distinct from other referents that are labeled *yellow*, *blue*, *green*, etc. (= a firstness action of the sign). At the same time, the referent takes on the referential meaning that it does because it is a category of knowing color encoded within a particular system of representation used by speakers of English (= a secondness action of the sign). Finally, the individual user of the sign will react emotionally and intellectually to its meaning in particular ways (= thirdness action of the sign).

Clearly, it is the system of representation that produces knowledge of color. The very same color category defined by red could have been represented differently (as in other languages) with, say, two words. In such a system of representation the two referents identified by the words would cover, together, the same color category represented by red. On the other hand, red could have been included within a larger category of color (as is the case in other languages). In such a system of representation, the English red would be only a part of the larger category. If we portray the referential domain of red with a circle (fig. A), then the option of representing the same domain with two words, *x* and *y*, can be shown with fig. B, and the option of including red as part of a larger category of color, *z*, with fig. C.

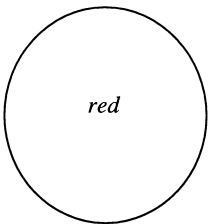


Fig. A

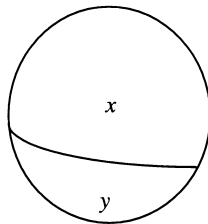


Fig. B

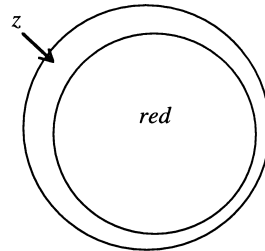


Fig. C

The word red provides a particular view of color (fig. A) that conditions its users to anticipate and attend to its occurrence in other domains of meaning and knowing. In effect, the establishment of the sign red to represent a color category is a useful thing not only because it allows us to know color in abstract ways through displacement, but also because it becomes itself a resource for further representational activity: e.g. it can be used to create new referents (redneck, red-tape, redness, etc.); it acquires connotative meanings (red with envy, red politics, etc.); and so on.

Research on categorization suggests, in fact, that knowledge and representation are intrinsically interconnected (see Taylor 1995 for a comprehensive treatment of the relative research). For the sake of convenience, the findings of the research can be summarized in the form of three general principles:

1. Knowledge is interconnected with representation (the representational principle).
2. Representation is a product biosemiotic modeling processes (the modeling principle)

3. Representation entails three dimensions (the dimensionality principle).

The latter principle is the one that is of interest here. We cannot go into the many interesting philosophical problems related to the first principle (see, for instance, Danesi 1995, 1997). It implies, in essence, that in order for something to be known in a mnemonically-stable way, it must be represented according to some system of signs. The modeling principle will be discussed briefly in the final section of this essay in relation to the dimensionality principle that will be elaborated here.

The dimensionality principle

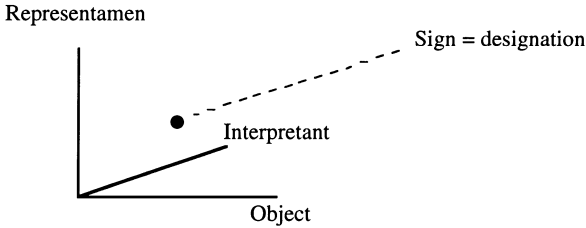
The dimensionality principle is envisaged as providing an analytical framework for the study of representation and more specifically for the investigation of how firstness, secondness, and thirdness dimensions constitute and interact within all representational systems. The objective in the remainder of this essay is, in fact, to look at a few of the ways in which dimensionality manifests itself.

As a starting point, let us consider Peirce’s own definition of the sign as a three-dimensional entity consisting of a representamen (literally something that does the representing), standing for an object in some respect or capacity (the interpretant). The representamen entails a firstness representational action inhering in the physical strategy of representation itself (the use of phonemes, hand movements, etc.). The object of the representamen entails a secondness action inhering in its displacement from its (real-world) context of occurrence to the representamen itself. This coaction between the representamen and the object implies a psychological ability to separate the sensory cognition of an object in the real world from its abstract recognition in the sign. Finally, the interpretant entails a thirdness representational action whereby the sign-user evaluates or responds to what the sign means socially, contextually, personally, etc.

The coaction among the representamen, the object and the interpretant can be modeled graphically in various ways. But, in my view, a three-dimensional coordinate diagram is perhaps the most appropriate type because it allows one to envisage firstness as the x-axis, secondness as the y-axis, and thirdness as the z-axis, and the sign’s meaning or designation as a point in this space. This particular type of

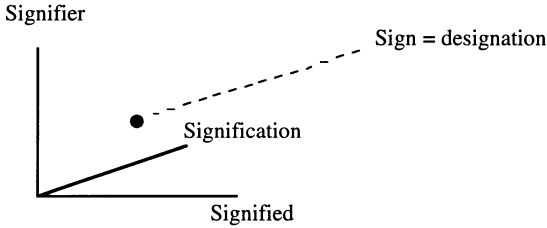
representational space can be called designational because it enfolds the sign's designation:

Designational Dimensionality



Designational dimensionality applies as well to the Saussurean (1916) definition of the sign as inhering in the triad signifier-signified-signification:

Designational Dimensionality (Saussurean Version)



There are, of course, fundamental differences between the Peircean and Saussurean views of the sign. Nevertheless, the dimensionality principle suggests that the two are isomorphic in designational terms: i.e. in both versions of the sign it is the coaction among the three dimensions in itself that is comparable, even though the individual dimensions are envisaged differently in their nature by Peirce and Saussure.

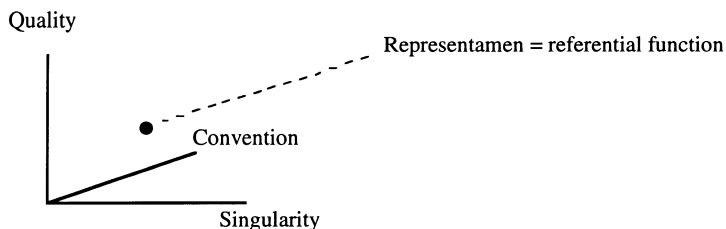
The dimensionality principle can be applied to virtually every other structural aspect of representation. It implies that in all representational systems there are various kinds of three-dimensional spaces such as the designational one described above. The task of the

semiotician is to identify what those spaces are, to establish what their respective three axes are, and to determine what kind of relation inheres among the axial dimensions. In the case above, for instance, the space was identified as designational, the axes were established in accordance with Peircean or Saussurean theory, and the kind of relation that inhered among them was determined to be that of coaction. In effect, a representational system consists of many such three-dimensional spaces and, thus, can itself be characterized as a hyperspace composed of these spaces. Structural relations such as the coactive one above occur both at the level of an individual three-dimensional space (= among the three axes), and at the level of the entire hyperspace (= among the various three-dimensional spaces that make-up the representational hyperspace) The former type of relation can be referred to as intra-dimensional (within a dimension) and the latter as inter-dimensional (across dimensions).

In addition to coaction, another type of intra-dimensional relation that can be extrapolated from the relevant research can be called collocation. This can be defined as the relation whereby a unit within a representational system bears its function or meaning proportionately in relation to its proximity to one or the other of the three axes. Peirce’s three trichotomies, for instance, exemplify collocation. His qualisign-sinsign-legisign trichotomy constitutes a space that encompasses the representamen itself, and can thus be called referential:

- A qualisign is a representamen that draws attention to some quality of its referent.
- A sinsign is a representamen that draws attention to, or singles out, a particular object in time-space.
- A legisign is a representamen that designates something by convention.

Referential Dimensionality



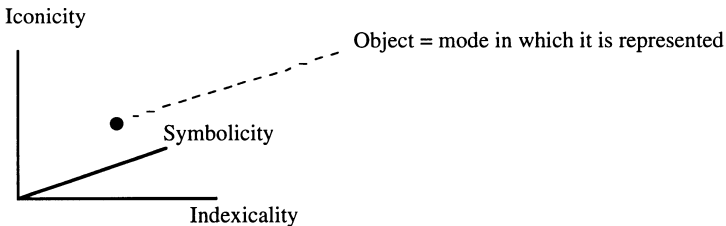
Clearly, it is the representamen's collocation relative to the axes that determines its referential function: if it is closer to the firstness axis it functions primarily as a qualisign; if it is closer to the secondness axis it functions primarily as sinsign; and if it is closer to the thirdness axis it functions primarily as a legisign. It is, of course, a pure qualisign, sinsign, or legisign if it falls on one specific axis. Now, in inter-dimensional hyperspace, referential dimensionality is adjacent to designational dimensionality because the firstness axis of designational space (= the representamen) is also the firstness axis of referential space. These two spaces — designational and referential — are contiguous along their firstness axes, while their respective secondness and thirdness axes jut out in opposite directions into their respective spaces.

Peirce's second classic trichotomy, namely his classification of signs according to how they refer to their objects as icons, indexes, and symbols, also reveals collocational dimensionality:

- An icon entails a firstness form of representation since it refers to an object through replication, simulation, or resemblance.
- An index entails a secondness form of representation since it singles out its object in space, time, or in relation to someone or something else.
- A symbol entails a thirdness form of rerepresentation since it represents its object according to convention.

Since this type of intra-dimensional relation inheres in how the object or referent is represented, it can be called modal:

Modal Dimensionality



Again, it is the object's collocation relative to the axes that determines its modality: if it is closer to the firstness axis it is proportionately more iconic; if it is closer to the secondness axis it is more indexical;

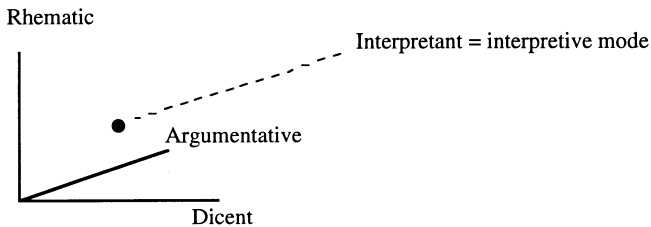
and if it is closer to the thirdness axis it is more symbolic. It is, of course, a pure icon, index, or symbol if it falls on a specific axis. In inter-dimensional hyperspace, modal dimensionality is also adjacent to designational dimensionality, but along a different axis. In this case it is the secondness axis of designational space (= the object) that is coincident with the firstness axis of modal space.

Peirce’s third classic trichotomy is his classification of interpretants as:

- rhemes, which are interpretants of qualisigns;
- dicisigns, which are interpretants of sinsigns;
- arguments, which are interpretants of legisigns.

Since these refer to types of interpretants, the dimensional space in which they occur can be called interpretive:

Interpretive Dimensionality

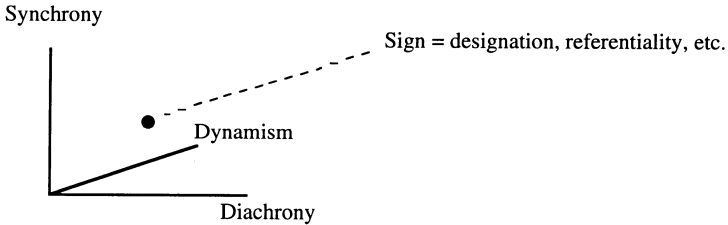


Once again, it is the interpretant’s collocation relative to the axes that determines its nature: if it is closer to the firstness axis it is proportionately more rhematic; if it is closer to the secondness axis it is more dicential; and if it is closer to the thirdness axis it is more argumentative. It is, of course, a pure rheme, dicisign, or argument if it falls on one specific axis. In inter-dimensional hyperspace, interpretive dimensionality is also adjacent to designational dimensionality, but along a different axis. In this case it is the thirdness axis of designational space (= the interpretant) that is coincident with the firstness axis of interpretive space.

For the sake of illustration, it is instructive to look at three other dimensionalities that can be called temporal, notational, and operational. Temporal dimensionality constitutes a space in which the various dimensionalities of the sign discussed above (designational, referential, etc.) are themselves inferrable relative to three temporal

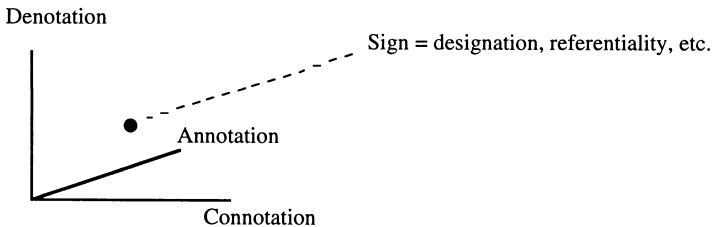
axes: the synchronic, the diachronic, and the dynamic. This is a coactive dimensionality: i.e. it entails a coaction among the firstness synchronic axis (present designation, referentiality, etc.), the secondness diachronic axis (acquired designation, referentiality, etc. over time), and the thirdness dynamic axis (the sign's potential to acquire new designations, referents, etc.):

Temporal Dimensionality



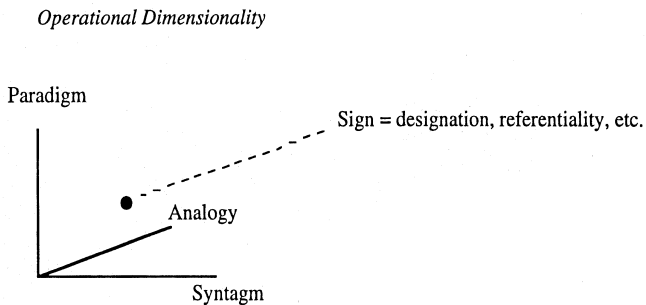
Notational dimensionality constitutes a space in which the various dimensionalities of the sign (designational, referential, etc.) are inferrable as well relative to three notational axes: the denotative, the connotative, and the annotative. This is a collocational dimensionality: i.e. it is the sign's collocation relative to the axes that determines its notation: if it is closer to the firstness axis it is primarily denotative (intended meaning); if it is closer to the secondness axis it is primarily connotative (extended meaning); and if it is closer to the thirdness axis it is primarily annotative (personal meaning or interpretation). It is, of course, purely denotative, connotative, or annotative if it falls on one specific axis

Notational Dimensionality



In representational hyperspace, notational dimensionality is itself coactive with the temporal dimensionality described above because the denotative meaning of a sign unfolds at a certain instant of time, its connotative meanings accrue over time, and its annotative meanings inhere in the dynamic potential of signification.

Lastly, operational dimensionality constitutes a space in which the various dimensionalities of the sign operate relative to three axes: the paradigmatic, the syntagmatic, and the analogic. This is a coactive dimensionality: i.e. it entails a coaction among the firstness paradigmatic axis (a selection operation), the secondness syntagmatic axis (a combination operation), and the thirdness analogic axis (a comparison operation):



In representational hyperspace, operational dimensionality is itself coactive with both the temporal and notational dimensionalities because: (1) the denotative meaning of a sign pertains to a certain instant of time and thus constitutes a paradigmatic operation; (2) the sign’s connotative meanings acquired over time are, of course, complementary and thus in syntagmatic relation; and (3) the annotative, dynamic potential of the sign is perceptible in terms of other signs and thus constitutes an analogic operation.

A synthesis

As the above examples illustrate, the dimensionality principle suggests a specific type of framework for relating signifying phenomena within representational systems to each other as well as an agenda for studying all representational systems. Its viability — which remains to be litmus-tested through actual analysis — rests on the presupposition

that: (1) all forms and subsystems of representation manifest a three-axial dimensionality (intra-dimensionality); (2) each dimensionality relates to other dimensionalities across the representational system (inter-dimensionality); and (3) there are at least two types of dimensional relations — coaction and correlation — that characterize representation.

The dimensionalities discussed above can now be summarized as follows:

Dimensionality	Structural Relation	Firstness	Secondness	Thirdness
Designational (Peircean)	coaction	representamen	object	interpretant
Designational (Saussurean)	coaction	signifier	signified	signification
Referential	colloaction	quality	singularity	convention
Modal	collocation	iconicity	indexicality	symbolicity
Interpretive	collocation	rhetic	dicent	argumentative
Temporal	coaction	synchrony	diachrony	dynamism
Notational	collocation	denotation	connotation	annotation
Operational	coaction	paradigm	syntagm	analogy

The dimensionality principle makes it explicit that there is an inter-connectedness among the multifarious dimensions of representation and signification. It also allows us to establish a commonality among different representational systems. Because all such systems are composed of the same kinds of dimensionalities, the principle provides a basis for showing an interrelation and interdependence among all areas of knowledge, from language to science and the arts (Meystell 1995). A digit in numerical representation, for instance, has the exact same structural features in dimensional terms that, say, a noun in language has — i.e. both are signs that exist in designational, referential, temporal, operational and other kinds of three-dimensional spaces, deriving their form, functions, and meanings in terms of these dimensionalities. In practical terms, the dimensionality principle makes obvious the fact that both types of signs are structurally isomorphic in the ways in which they designate something, refer to the world, take on connotations, and so on. The difference between a digit and a noun is thus not to be located in structural patterns, but in the different functions of the representational systems to which they

pertain. This is why, despite their different cognitive and social functions, both systems are understandable in exactly the same way. In essence, the dimensionality principles makes it obvious why such seemingly diverse forms of representation as poetry and mathematics are not mutually exclusive — with adequate exposure to both, people will be able to extract meaning from either one of them in remarkably similar ways. Indeed, the dimensionality principle helps unravel the structural reasons why poetry and mathematics make their meanings, as different as they might appear to be, in comparable ways (see Sawyer 1959, Miller 1987, Baigrie 1996, Tufte 1997 for diverse, yet relevant, discussions of the interconnectedness between scientific and artistic forms of representation).

Modeling systems theory

It is instructive at this point to return to the discussion on representation and semiosis initiated above one more time because, in my view, the key to establishing the viability of the dimensionality principle in semiotic terms is provided by Sebeok’s pivotal notion of modeling systems (e.g. 1976, 1979, 1981, 1986, 1991, 1994). Although this notion has roots in the work of various twentieth-century structuralists, as Sebeok himself acknowledges (e.g. 1994), it is Sebeok who has given this idea its most viable formulation. Modeling systems theory is a powerful analytical framework for explaining the etiology of representational systems, behaviors, and activities. Take, for instance, the emergence and patterned development of representational behavior in children. As discussed briefly above, the first knowledge-gaining behavior of preverbal infants is sensory cognizing which constitutes a strategy based on the sensible properties of things (i.e. on properties that can be sensed). This innate ability serves to enhance recognition of the same things without any further processing of sensory input. The child’s ability to transcend this sensory phase and to engage in rudimentary representational activities (pointing and making imitative sounds) constitutes the earliest semiotic mode of knowing. This mode is a concomitant of the brain’s primary modeling system (PMS). The PMS is an innate neural system that endows the human infant who has passed through the sensory cognizing phase with the capacity to represent objects through imitative or indicational semiosis. Now, as the child develops cognitively and socially, his/her

representational activities become more and more abstract (i.e. progressively more reflective of displacement). This secondary mode of knowing and representing is a concomitant of the developing brain's secondary modeling system (SMS). The SMS is a "higher function" neural system that endows the child who has passed through the PMS phase with the capacity to represent objects through verbal semiosis. Finally, at around 15–20 months the child manifests increasingly the ability to engage in abstract symbolism (i.e. to understand narratives, to follow picture sequences, etc.). This is a tertiary mode of knowing and representation that is a concomitant of the maturing brain's tertiary modeling system (TMS). The TMS is a highly complex neural system involving all areas of the neocortex that endows the verbal child with the capacity to know and represent the world in culture-specific symbolic ways.

The two crucial insights of modeling systems theory can be summarized as follows: (1) representation is tied to three semiotic phases; and (2) these phases are evolutionary — i.e. the development of complex symbolic activity (= a TMS endowment) is dependent upon a prior emergence of verbal representational activities (= a SMS endowment) which is itself dependent upon the development of early imitative and indicational semiosis (= a PMS endowment). In sum:

- Primary Modeling System (PMS) = the neural system that predisposes the human infant to engage in simulative forms of semiosis which in turn permit imitative and indicational representational activities.
- Secondary Modeling System (SMS) = the more complex neural system that predisposes the human infant to engage in verbal forms of semiosis which in turn permit linguistic representational activities.
- Tertiary Modeling System (TMS) = the highly complex neural system that predisposes the maturing child to engage in highly abstract forms of semiosis which in turn permit symbolic representational activities (narration, art, etc.). As Sebeok (1994: 127) remarks, the TMS is "the most creative modeling that Nature has thus far evolved."

Modeling system theory can be seen to provide a semiotic explanation of dimensionality. Indeed, the firstness axes of all the constituent (sub)spaces within representational systems are clearly concomitants of the brain's PMS. Thus, for instance, in designational, referential, modal, and other spaces, the firstness axis is a concomitant of the

sense-based propensity to produce signifiers that are simulative, iconic, denotative, etc. The secondness and thirdness axes of representational (sub)spaces are anchored respectively in the semiotic properties of the SMS and TMS respectively: i.e. they are concomitants of the brain’s propensity to extend primary models into secondary and tertiary ones. Indeed, the whole representational hyperspace can be envisaged as being itself an evolutionary outgrowth of a coaction among these three modeling systems: i.e. it can be envisaged as a hyperspace configured by a firstness PMS axis, a secondness SMS axis, and a thirdness TMS axis.

Concluding Remarks

In this essay, I have put forward the notion of dimensionality as a target for discussion, linking it to semiosis in terms of modeling systems theory. Whether it is or is not a viable principle for conducting semiotic analysis remains to be seen. If nothing else, it raises some interesting questions for future work in semiotic theory:

- How many dimensional spaces are there in representational systems?
- Are there are other types of structural relations, in addition to coaction and collocation?
- Can the dimensionality principle be extended to the analysis of texts, codes, and other kinds of signifying phenomena?
- Are the axes of dimensional spaces reflective of psychic and emotional structures?
- Can the dimensionality principle be applied to artificial or computing systems?

The above are just a few of the questions that the dimensionality principle begs. But perhaps its most important role in semiotic method is permitting an investigation of the premise that all knowledge is interconnected with representation and ultimately with semiosis. Clearly, the descriptive apparatus of the dimensionality principle entails implies three phases of analysis: (1) establishing dimensionalities; (2) determining the kind of relation — coaction or collocation meaning; i.e, they are momentary points-of-arrival in the evolutionary proclivities that characterize all signifying systems. The dimensionality apparatus does not describe change. This is something that will have to be approached with other ways of studying representation. It

simply describes meaning patterns and structures in themselves. To make an analogy, it allows us to study how musical notation can be employed to make musical texts on paper. It describes how the texts contain musical meaning. It does not tell us how those texts got to be that way, nor does it tell us how the text is translated into music by the performer.

Its main intent is to show that the texts we use on a daily basis to make sense of things in our world — physical, psychological, and cultural — are constructed with the same properties of representation throughout societies. The semiotic agenda in the future should focus more, in my view, on showing how representation encodes knowledge in virtually the same way throughout the world, how the same features of representation allow us to acquire specific kinds of knowledge and skill, and how humans are able to match the representation to the task. It is interesting to note that among the first to suggest a study of knowledge as a semiotic process was the great Russian psychologist Vygotsky (see also Daniels 1996). As Vygotsky found in his study of children, signs invariably mediate knowledge and mental functions. As Davydov and Radzikhovskii (1985: 59) have observed, unfortunately the “studies of the sign mediated nature of mental functions have not developed further” since Vygotsky, but that this “can be considered a weakness that can be overcome in the future.” Work on modeling system theory and its corollaries, like the dimensionality principle discussed here will, in my view, go a long way towards overcoming that very weakness.

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“Принцип дименсиональности” и семиотический анализ

Статья ставит перед собой цель объединить разные разработки репрезентационных систем, исходящих из теории Пирса, в общий и применяемый в практике принцип, обозначенный автором как “принцип дименсиональности”.

Единая создающая знания активность, которую допускает семиозис, описывается посредством трех принципов:

- 1) знание взаимосвязано с репрезентацией (репрезентационный принцип)
- 2) репрезентация является продуктом биосемиозисного моделирующего процесса (принцип моделирования)
- 3) репрезентация имеет три измерения (принцип дименсиональности)

Дименсиональный принцип призван продемонстрировать, как Первичность, Вторичность и Троичность (в понимании Пирса) содержатся и интерактивируются во всех системах репрезентаций.

Также указывается, что деление моделирующих систем на три подгруппы может быть связано с тремя измерениями репрезентации.

“Dimensionaalsuse printsiip” ja semiootiline analüüs

Artikkel seab ülesandeks sünteesida C. Peirce'i teooriast lähtuvad representatsioonisüsteemide käsitlused üldiseks ja praktiliselt rakendatavaks printsiibiks, mida autor nimetab ‘dimensionaalsuse printsiibiks’.

Üldine teadmisi loov aktiivsus, mida semioosis võimaldab, on representatsioon (taasesitus), mis kirjeldub kolme printsiibi kaudu:

- (a) teadmine on vastastikku seotud taasesitusega (taasesituslik printsiip);
- (b) taasesitus on biosemioosilise modelleerimisprotsessi produkt (modelleerimisprintsiip);
- (c) taasesitusel on kolm dimensiooni (dimensionaalsuse printsiip).

Dimensionaalsuse printsiibi oluks on näidata, kuidas esmasus, teisesus ja kolmasus (Peirce'i mõttes) sisalduvad ja interakteeruvad kõigis taasesituse süsteemides.

Muuhulgas näidatakse, et modelleerivate süsteemide kolmeksjaotus võib olla seotud taasesituse kolme dimensiooniga.