

Poetics in Schizophrenic Language: Speech, Gesture and Biosemiotics

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Abstract This paper offers a biosemiotic account of the poetic aspects of gesture and speech in schizophrenia. The argument is that speech and gesture are not the mere expression of pre-verbal thoughts. Instead, meaning is enacted by the temporal and semantic coordination of speech and gesture. The bodily basis of language is highlighted by the fact that, failing to create language that is organized around topics, individuals with schizophrenia often rely on poetic associations in directing their utterances. Accordingly, the analysis of schizophrenic speech and gesture based on McNeill's *Growth Point theory* is enriched with reference to both Cowley's (2007b) views on language as distributed social coordination, and Alexander's (Biosemiotics 2(1):77–100, 2009) description of formal causes in nature. Schizophrenic language can be seen as a hypertrophied manifestation of the discourse-scaffolding function of poetic associations in speech and gesture. The analysis of schizophrenic language shows that language behavior need not be built on pre-verbal thoughts and important aspects of schizophrenic language, such as metalinguistic awareness and semiotic agency, can be clarified by applying concepts from biosemiotics.

Keywords Schizophrenia · Gesture · Poetics · Language · Biosemiotics

Introduction

Individuals with schizophrenia often produce incoherent discourse filled with strange semantic associations (Chaika 1990). Schizophrenic discourse is often not

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organized around topics, and it can take on a poetic quality (Forrest 1965). For example:

Looks like clay. Sounds like gray. Take you for a roll in the hay. Hay day. May Day. Help
(Cohen 1978, p. 29).

Furthermore, individuals with schizophrenia are often easily distracted by poetic and etymological relationships in language (Cutting 1990). Take, for instance, these comments by an individual with schizophrenia:

What about a cougar? What would you associate a ‘gar’ with? What is a ‘gar’?
See this is what I’m telling you about these letters coming together. I separate them out. They indicate people’s desires. (Oltmanns 1984)

Individuals with schizophrenia often interact with language in an overly abstract or hyper-reflexive manner, as if, like when learning a foreign language, it was an object of contemplation.

While the poetic quality of schizophrenic discourse is often ignored by researchers, (for an exception, see Forrest 1965), this paper argues that this occurs because of the limitations of theories that see language as a symbolic code. In fact, much can be learned by considering how and why individuals with schizophrenia sometimes organize their discourse along poetic lines, compulsively etymologize and, above all, why they may develop a hyper-reflexive attitude towards language. In considering what these phenomena tell us about both language and schizophrenia, I will explore the function of poetics in the self-organization of discourse by integrating Alexander’s (2009) view of purpose and poetics in biosemiosis with McNeill’s (1992, 2005) psycholinguistic theory of speech and gesture production. In turn, I will attempt to show how biosemiotic views of language as social coordination (Cowley 2007b) can shed light on general semiotic processes in schizophrenia. I will present a case study of gesture in schizophrenia to help illustrate how a biosemiotic account of language production, and meaning-making *writ large*, is more parsimonious than views of language as a code-based system.

Language and Meaning in Schizophrenia

Schizophrenia is a heterogeneous condition that affects one out of a hundred people worldwide (DSM; American Psychiatric Association 1994). Along with disorganized discourse, the core symptoms are delusions, paranoia, disorganized behavior, motor dysfunction, and emotional dysregulation (DSM; American Psychiatric Association 1994). Not all individuals with schizophrenia produce disorganized discourse (commonly referred to as “thought disorder”) and the symptoms are often intermittent and fluctuate significantly based on the emotional salience of the topic under discussion (Docherty et al. 1998). Schizophrenic discourse often contains clang associations that include rhyme, assonance, alliteration, and punning (Andreasen 1984). These associations give a “poetic” quality to the discourse. However, in this paper, the term “poetic” refers to language or signs that are tied together by

coincidental formal (iconic or indexical) relationships and it is not limited to poetry as an artistic creation. Some semantic issues in schizophrenic discourse include loose associations, ambiguous referents, and neologisms (Sanfillippo and Hoffman 1999). Individuals with schizophrenia may also have difficulty producing coherent goal-directed discourse (Sanfillippo and Hoffman 1999). This is related to “associative chaining” where the semantic and formal associations between contiguous utterances tie the discourse together. For example:

...My mother’s name was Bill.. and coo? St. Valentine’s day is the official startin’ of the breedin’ season of the birds. All buzzards can coo. I like to see it pronounced buzzards rightly. They work hard. So do parakeets... (Chaika 1974, p. 269)

Individuals with schizophrenia will often string ideas together based on loose semantic or formal associations such as taking the name “Bill” and linking it to a bird’s “bill” which then leads to “coo.”

The tendency of individuals with schizophrenia to etymologize also appears in the following example:

Contentment? Well, uh, contentment, well the word contentment, having a book perhaps, perhaps your having a subject, perhaps you have a chapter of reading, but when you come to the word “men” you wonder if you should be content with men in your life and then you get to the letter T and you wonder if you should be content having tea by yourself or be content with having it with a group and so forth (Lorenz 1961, p. 604).

When asked to define “contentment” this individual deconstructs the various constituent elements of the word and plays with the polysemy of these lexical fragments. When individuals with schizophrenia behave as amateur linguists in this way, they often fail to attend to language as a means of achieving social understanding. Importantly, with this hyper-reflexive attitude towards language, “...the schizophrenic who becomes acutely aware of his or her own words or gestures as *words or gestures*, they suddenly reveal their nature as signs—or semiotic *things*” (Phillips 2000, p. 19).

Using the above examples of schizophrenic discourse, we can begin to understand how conventional meanings become altered for individuals with schizophrenia. In addition, seemingly inconsequential objects can become abnormally salient, for:

In schizophrenia everything is interconnected, from itself everything results, every fact, even the most insignificant one (it could be a movement of a doctor’s hand or a bird which alighted on a window-sill for a moment) are united into a monumental determined coincidence. In the world of schizophrenia the accidental does not exist. Facts, objects, and phenomena of nature pulse with their unrelenting meanings. These meanings catch fire in a chain-like fashion, one from the other, like flames which consume everything all around (Wróbel 1989, p. 106).

Coincidental relationships can gain symbolic import for individuals with schizophrenia. In the flow of speaking and gesturing, poetic sparks string together loosely

connected ideas. In schizophrenia, idiosyncratic poetic associations can overwhelm normative semiotic interpretation.

In addition to their difficulties with speech, individuals with schizophrenia have also been found to interpret the random or incidental hand movements of other people as intentional communicative acts (Bucci et al. 2007). Individuals with schizophrenia who over-interpret hand movements in this way are also more likely to have delusions of reference where, e.g., they might believe that there are messages on television or the radio that are intended specifically for them. Individuals with schizophrenia do not just produce alternative interpretations of conventional signs, they also find certain indexical or iconic relationships in the environment to have deep meaning where non-schizophrenic individuals would see mere coincidence.

The strangeness of schizophrenic discourse can also be understood in light of the global impairment of cognitive coordination (Phillips and Silverstein 2003) and contextualization (Titone et al. 2000) in schizophrenia. This impaired coordination and contextualization appears in linguistic, cognitive, and perceptual domains (Phillips and Silverstein 2003). Contextualization, broadly defined, involves the temporal synchronization and coordination of various biopsychological processes or, alternatively, the creation and maintenance of a set of information over time while simultaneously inhibiting distracting information. Impaired contextualization in schizophrenia has been interpreted to be the result of dysfunctional neural synchrony (Phillips and Silverstein 2003). The temporal and semantic coordination of speech and gesture are core elements of discourse production and, as such, global deficits in neural synchronization can help account for the lack of social and cognitive coordination in schizophrenic discourse.

The difficulty that individuals with schizophrenia have controlling the direction of their discourse appears to be related to impaired cognitive control (Chambon et al. 2008). Cognitive control provides goal-directed selective attention that keeps thought and behavior on the task at hand (Funahashi 2001). Impaired cognitive control can lead to, "...unexpected topic switches, derailment or tangential responses might indeed arise from an inability to continuously monitor the hierarchical organization of human language" (Chambon et al. 2008, p. 968). Issues with contextualization and cognitive control can both contribute to the lack of coherence found in schizophrenic discourse.

The question remains why these deficits in contextualization, cognitive coordination, and cognitive control create not just incoherence in schizophrenic discourse, but a compulsive tendency towards poetic associations and excessive etymologizing. Poetics, metalinguistic awareness, contextualization, coordination, and cognitive control are key elements in many biosemiotic theories of discourse production (cf. Cowley 2006). However, code views of discourse production that consider these elements to be peripheral have problems adequately addressing these phenomena. Code views of language production (cf. Levelt 1989) follow a computer metaphor where an utterance is generated algorithmically by manipulating decontextualized symbols with the formal rules of a "universal grammar." In this linear process a preformed concept serves as the input for the final product of speaking and gesturing. The issues of contextualization, coordination, and control are considered to be external to the computation of sentences, whereas from a biosemiotic perspective these issues are

fundamental for the emergence of meaning in discourse. A biosemiotic perspective can illustrate how schizophrenic discourse production should be seen as the effect of the aberrant semiotic process of creating or interpreting signs, be they signs in speech, gesture, or any meaningful objects in the environment.

Biosemiotic Theories of Language

In most “code” views of language, language production is controlled by an autonomous “central executive” in a top-down fashion (cf. Levelt 1989). In the alternative models that envision language as a coordinating activity, there is no need to posit a central executive because the mental “representations” of symbols are distributed across multiple agents and time-scales. In distributed views of language and cognition, sentence production does not begin with a preverbal thought in our mind that is then simply translated into a particular language. Instead, meaning emerges dynamically through the distributed coordination of multiple social, psychological, and biological processes including, but not limited to, speech and gesture. We can view the enactment of meaning in discourse as a self-organizing biosemiotic process that has no need for a central executive.

In biosemiotic views of language as distributed coordination, affect is an important variable for explaining how “meaning spreads” in conversations as, “... affective processes co-ordinate speaking, feeling and acting such that, when words matter little, dynamics dominate talk” (Cowley 2006, p. 16). Cowley contends that the biomechanics of affective processes regulate the interactive dynamics of speech and gesture (both between and within individuals) so that unintended meanings emerge through felt bodily processes (2006, p. 16). To help incorporate biosemiosis into linguistic theory, Cowley invokes Damasio’s (1999) concept of “core-consciousness.” Core-consciousness entails a pre-reflective “feeling-of-what-happens” where “somatic markers” or affective values for stimuli precede and guide our cognitive evaluation of the stimuli (Damasio 1999). Our rapid affective evaluations modulate our readiness to act and thus serve as initial conditions for self-organization across multiple time-scales. These microdynamic shifts in our felt experience of the world set the stage for the microgenetic formation of utterances. For example, positive affect (Isen et al. 1985) or increased levels of dopamine (Kischka et al. 1996) alter our mode of forming semantic associations. In addition, there is the issue of “affective reactivity” in schizophrenia, where the affective value of the topic under discussion significantly affects the degree of disorganization in discourse (Docherty et al. 1998). Similarly, in bipolar disorder, the degree of poetic organization in discourse is correlated with mood (Goss 2006). If we incorporate the biomechanics of affect into linguistic theory then conversations become “biosemiotic events where interactional *minutiae* ready individuals for what may happen next” (Cowley 2006, p. 17).

Metalinguistic awareness is another key component of biosemiotic views of language. Although language is a first-order activity where meaning is enacted through the multimodal coordination of conversation participants, we also take on a second-order “language stance” where we achieve reflexivity about verbal activity. We interpret utterances as objects or “words” that

we can manipulate (Cowley 2007a). Linguistic reflexivity is a skill we develop as infants through linguistic interactions where others redirect our first-order language activity by drawing our attention to the process of speaking and thereby objectifying it as a second-order construct (Cowley 2007a).

Code views of language take our folk-based concept of “words-as-objects” and reify it into the theoretical position that we process these linguistic objects as decontextualized symbols. Individuals with schizophrenia, like many linguists, also tend to become obsessed with words-as-objects and ignore how words are embodied and embedded within the first-order activity of socially coordinated multimodal communication. We can witness this in the poetic wordplay and etymological musings of individuals with schizophrenia. This attitude towards language has been seen as one aspect of “hyper-reflexivity” in schizophrenia, where what are normally implicit psychological processes become salient objects for reflection (Sass 1992). Gallagher and Varela (2003) theorized that hyper-reflexivity is brought about when abnormal neurobiological processes disrupt the dynamics of first-order activities, such as when abnormal levels of neurotransmitters lead to disturbed affective processes that alters the microdynamics of coordinating language production.

Biosemitic approaches to language that key in on coordination dynamics can address the issues of altered cognitive coordination, contextualization, affect, and metalinguistic awareness in schizophrenia. Alternatively, code views of language do not consider these issues to be central to language production. In addition, nonverbal communication and poetics (e.g. rhythm) are important components of the social coordination of discourse, but these aspects of language production are secondary concerns for code views of language.

Growth Point Theory of Gesture

McNeill’s Growth Point theory of gesture and language provides a useful framework for understanding how meaning emerges through the dynamic coordination of speech and gesture (2005). Its basic notion is that the gestures we unwittingly produce while we speak provide a key to understanding the “real-time” microgenesis of language. These coverbal gestures are not simply “non-verbal” expression that accompany speech, but instead are an integral component of language production (McNeill 2005). Coverbal gestures convey information that either reinforces the content of speech or provides complementary information that is related to, but different from, what is in speech. The information that is conveyed through speech and gesture provides a deeper understanding of our cognitive processes than looking at speech alone. Unlike the conventionalized nature of spoken language, coverbal gestures are the idiosyncratic creations of individuals. Idiosyncratic gestures are bound to the discourse context they were produced in. There are, of course, conventionalized gestures, such as the thumbs up gesture or the “V” for victory, but the type of gestures we are concerned with are the ones produced unwittingly while we speak.

In McNeill’s model, the temporal and semantic combination of any speech/gesture pair is called a Growth Point (GP). In a GP, meaning emerges through the dynamic interaction between speech, gesture and thought. However, a GP is not

simply the expression of a preformed idea that is expressed through speech and gesture. Instead, meaning emerges through the active process of speaking and gesturing. The following case study of speech and gesture synchronization will help illustrate the concept of a GP.

In this case study, a woman was shown a Sylvester and Tweety cartoon, and then she recounted the events of the cartoon. The brackets in the example below indicate when the woman starts and stops moving her hands and the bolded type is the meaningful component of the gesture—the gesture “stroke.” (McNeill and Duncan 2000, p. 144. Figure 1 courtesy of D. McNeill and University of Chicago Press):

and Tweety Bird runs and gets a bowling b[all and **drops it down the**
drainpipe]

While producing this utterance the woman made a two-handed gesture that depicts a bowling ball being thrust down a pipe by Tweety, one of the protagonists in the cartoon. Upon first glance it may seem as if her gesture just reinforces the content of her speech, however, the fact that the downward movement of her hands coincided exactly with the words “it down,” as opposed to “drops it” or any other segment of her utterance, is very important. The fact that her gesture synchronizes with “it down” allows us to infer that this woman was extending a discourse theme in which she established that “it” (the bowling ball) was the key agent behind the action as opposed to Tweety. We can infer this by examining the speech/gesture coordination, the discourse context around this particular utterance. Additionally, we would look at the woman’s other gestures along with our own knowledge of the cartoon. For instance, Tweety actually drops the bowling ball down with his hands under the ball—palms up, whereas the woman’s palms were facing down. In her previous gestures and speech the woman set up a recurrent theme where one of the characters, Sylvester, is continually thwarted by antagonistic forces such as the bowling ball going down the drainpipe while he climbs up it.

In GPs, thoughts emerge simultaneously in the auditory and visuomotoric modalities of speech and gesture, respectively. These are also two opposing semiotic, analytic speech versus imagistic gesture. The meaningful shapes and motions that arise in gestures constitute imagistic thought that is global and synthetic, where the whole determines the meaning of the parts. In contrast, spoken language is analytic, segmented, and operates from the bottom up as linguistic units are combined linearly and hierarchically into meaningful constructions. These two opposing semiotic modes exist in an unstable relationship that is resolved dialectically through the

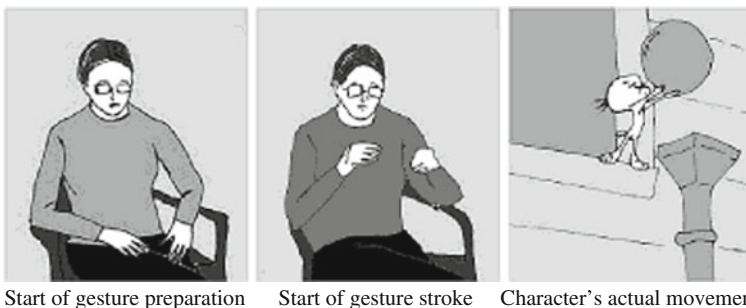


Fig. 1

semantic and temporal integration of speech and gesture. Analytic speech and imagistic gesture must be coordinated to form one coherent utterance through the unpacking of GPs (McNeill 1992).

A GP can also be thought of as a point of differentiation or a newsworthy contrast that emerges within a discourse context. In the flow of discourse, a GP emerges from, and is contrasted with, the context of the previous GP. A subsequent GP brings forth a new idea or point of differentiation from the context of the antecedent GP. This entails a, "...dynamic, continuously updated process in which new fields of opposition are formed and new GPs or psychological predicates are differentiated in ongoing cycles of thinking for speaking" (McNeill 2005, p. 107). Context is a built-in component of the dialectical resolution of imagistic thought and analytic language that occurs in GP formation.

The ongoing cycles of GP production involve the recurrent construction and disintegration of GPs. Examining the dynamics of GP production allows us to explain how the semantic and material qualities of one GP (the just-produced GP) are recycled into a subsequent GP. The contextual contiguity between successive GPs is brought about by the "fragmentation phase." In the fragmentation phase the material from one GP, the coherent whole of the GP, is fragmented to initiate the dialectical processes of temporal and semantic unification of speech and gesture in the next GP. Part of the intrinsic motivation for this reintegration is the "benign instability" (McNeill 2005, p. 105) engendered by the opposing semiotic modes of imagistic gesture and analytic language. This inherent semiotic tension sparks the formation of novel GPs as the benign instability:

...builds semantic cohesion directly into the process. If the fragments of the preceding cycle are used to start the next cycle, there is inevitably a partial continuation of the preceding stream of speech and thought, ensuring coherence (McNeill 1992, p. 239).

In the fragmentation the semiotic structure of one GP is fragmented and then the linguistic and gestural fragments are automatically reintegrated into successive GPs, creating cohesive links between contiguous GPs. An essential function of the fragmentation phase of GP formation is that it allows discourse to follow unpredictable paths. Chevalier illustrates this with what he calls "the rule of fragmentation" in semiosis:

...a recognizable sound-image such as the interjection "ouch" (triggered by the burning of one's hand) will be accompanied by a specific breathing pattern and particular movements of the larynx, the mouth, and facial muscles. All signs and signals converge on the expression of pain. The rule of fragmentation, however, makes it possible for physical accompaniments (pain sensation and respiratory rhythm) to survive the fading of the sound-image "ouch." They are freed from one "practical synthesis" and serve to inform or trigger a new assemblage (moaning, shaking the burnt hand to reduce pain), thereby allowing the previous composition to both continue and evolve (2002, p. 186)

With GPs, the inherent instability of the momentary synthesis of speech and gesture fuels our creative associational engines. This creative potential can be enhanced

through poetics as poetic associations, by their very nature, destabilize the conventional meanings of words. Fragmentation and poetic reintegration serves a discourse-scaffolding function that allows for unpredictability in discourse so that we are not overly bound by our semiotic constraints.

The Material Carrier in Language

In GP theory, gestures are seen as “material carriers” of language (McNeill and Duncan 2000). As material carriers, gestures are, “...the embodiment of meaning in a concrete enactment” (McNeill 2005, p. 98). With gesture, “...*the actual motion of the gesture itself*, is a dimension of meaning. Such is possible if the gesture *is* the very image; not an ‘expression’ or ‘representation’ of it, but *is* it.” (McNeill 2005, p. 98, *italics in original*). Material carriers participate in meaning making as there is a reciprocally determining relationship between language, gesture, and thought. Cognition can proceed without language but our verbalized thoughts always bear the mark of material carriers. The only “preformed” aspect of our utterances is the temporal and contextual embedding of previous material carriers in discourse contexts. For instance, for a newly forming GP, the antecedent GP provides the semantic and formal material that partially constitutes the new GP’s development. The symbolizing potential of words are constrained by their conventional nature, but gestures gain their power for enhancing and embodying a person’s “cognitive being” through their idiosyncratic nature, which provides more flexibility and creative control to the individual (McNeill 2005, p. 99). This concept of material carriers in language, the dynamic enactment of meaning, is at odds with traditional representational views of language where the material vehicle, the form of a linguistic unit, plays no role in the microgenesis of thoughts.

Another area where GP theory departs radically from representational views of language is that we are not required to posit a central executive that controls the formation of GPs. This follows the idea that the signifying capacity of material carriers enables the emergence of complex self-organized discourse. If we abandon the concept that preformed thoughts are simply expressed through speech and gesture (cf. Levelt 1989) we can see:

...mind in terms that more closely resemble a semianarchic parallel organization of competing elements, ...where different elements gain control at different times. But crucially, no element in the dodging and bumping horde is the privileged source of thinking... Instead, gesture and (overt and covert) speech emerge as interacting parts of a distributed, semianarchic cognitive engine, participating in cognitively potent self-stimulating loops whose activity is as much an *aspect* of our thinking as its *result*. (Clark 2008, pp. 131–133).

We can see the role of material carriers in speaking and gesturing as the, “cognitive equivalent of a forced induction system” (Clark 2008, p. 131). In a distributed view of language, the “origin” or “source” of the coordinated discourse is distributed in time and space within and between interactants.

The Purpose of Poetics in Biosemiosis

According to Alexander (2009), in biosemiosis, selection based on accidental poetic associations, what she terms “formal selection,” serves the fundamental purpose of creating “originality.” To qualify as original, in this sense, something must be beneficial for a self-organizing system, and not just novel. In this framework, biosemiosis entails that self-organizing systems, anything from cells to societies, follow the same basic patterns when producing meaningful behavior. Alexander advances the idea that, for biosemiosis:

At the level of individual actions/state changes within a self-organizing system, there are relationships between things that matter in ways that are language-like, involving index and icon, or at least nascent versions of signs. Language-like interactions make a system’s evolution unpredictable. Possible outcomes are not equiprobable in the evolution of a complex system, and the most statistically prevalent do not necessarily prevail. Instead likeness—or metaphoric properties—begin (sic) to effect outcomes. Also, the causal relationships invoked by nearness—or metonymic properties—begin to effect outcomes. This is my interpretation of formal or neutral selection (2009, p. 86).

The power of formal selection lies in its ability to destabilize entrenched semiotic relationships and help reorganize them into original patterns. In discourse production, formal selection, the iconic and indexical relationships inherent in the material nature of language, provides a vehicle for transitioning between semiotic states, i.e., GPs. The beneficial effect of spontaneous poetics in discourse, the benign semiotic instability in GP formation, is to pull one’s ideational trajectory in unexpected and original directions.

Formal selection serves a fundamental purpose in biosemiosis, but in “conventional” discourse production, which focuses on creating language that is readily interpretable, it often appears to play a secondary role. Alternatively, poetry brings the creative purpose of formal selection to the fore. In schizophrenia, the poetic discourse appears to lack a pragmatic goal and formal selection seems to “unintentionally” drive discourse production. In biosemiosis, this lack of directionality follows from being over-determined by formal selection, where semiotic self-organization is subjugated to semi-anarchic poetic coincidences. However, in Alexander’s interpretation of biosemiosis in self-organizing systems, original “pragmatic” goal-directed behavior, i.e., new transitions between semiotic states such as GPs, actually materializes out of formal selection through the fortuitous misinterpretation of signs. With such misinterpretations, “If that sign actually represents a different kind of object that turns out to be functional for the system in a different way, there may be a re-functioning of the system/response to maintain a new purpose—originality” (Alexander 2009, p. 87). The poetic mode of selection enables self-organizing system to incorporate original and productive behaviors.

On the issue of directionality or intentionality in self-organizing systems, Alexander claims that, “...intentionality emerges from a formal selection process, for which the so-called “object” or “goal” (to which selective actions refer or are “about”) is better understood as the dynamic organization of the whole which is represented *to the parts of the system* in the change in the dynamic structure of their

own responses that support the system as a whole” (Alexander 2009, p. 83, *italics in original*). If discourse production, transitioning between GPs, is a self-organizing process then the ‘goal’ behind any utterance is enacted through speaking and gesturing. We only understand it as realizing a goal or intention after the fact by interpreting the effect it has on the parties present (including the speaker). *Contra* code views of language production, utterances are not the product the encoding of a preformed mental concept. Instead, a verbal concept can only be brought into full cognitive being, in the form of a GP, through the coordinated activity of speaking and gesturing. Alexander’s perspective on poetics and purpose in biosemiosis allows us to see that interpretation, including discourse production, can occur without presupposing a “central executive” who does the interpreting. In light of this, the GP theory comports with biosemiotic theories of language that view interpretation as a distributed process, as opposed to code views that posit a “central executive,” a disembodied homunculus that selects its own preformed mental concept that is only subsequently expressed through the body.

In schizophrenia, we witness the perils of unconstrained poetic self-organization in discourse, but with the semiotic constraints of conventionalized language, like highly formalized genres of poetry, formal selection operates in a functional communicative manner. Somewhere in-between structured sonnets and schizophrenic discourse lie conventional styles of discourse where implicit formal selection still influences language production to various degrees, regardless of whether or not speakers are aware of it.

The Poetics of Gesture

Poetic relationships within and between gestures can occur spontaneously in everyday conversation. This is made easier because most gestures possess an iconic and/or indexical relationship to the objects they reference. The formal similarities between gestures can sometimes breed confusion during discourse, just like homophones can create misunderstandings in speech. Poetic relationships in gesture can be established through the repetition of form, location (of articulation), and motion. A gesture can bear a metaphorical or metonymic relation to the speech it co-occurs with and to other gestures within a discourse. There are conventional metaphoric gestures such as the “conduit gesture” where the hands are cupped like a bowl in order to hold an imaginary entity that stands for an abstract idea (McNeill 2005).

In addition to conventionalized metaphoric gestures, there can be ad hoc or idiosyncratic poetic gestures that develop unwittingly in discourse (McNeill 2008). For example, a two-handed gesture can iconically depict the partial contour of a bowling ball moving downwards and thus metonymically (as it only partially depicts the bowling ball) represent a downward-moving bowling ball (McNeill 2008). In turn, this metonymic gesture can take on an additional metaphorical interpretation within a broader discourse context where it can represent an abstract concept such as an antagonistic force working against a protagonist (McNeill 2008). Idiosyncratic metaphoric gestures such as the aforementioned example are often embedded within a gestural catchment. A catchment arises when features of one gesture are repeated

in at least one subsequent gesture that may or may not occur consecutively. When someone repeats elements of a specific image in their gesture, they create recurrent themes that tie together separate GPs and help form higher-level discourse units. An individual telling a story generally doesn't plan out a gestural catchment, but as their discourse unfolds they make use of recurrent gestural forms and space to tie their narrative together. In catchments, we can see how the poetic aspects of gesture serve to materially scaffold discourse.

Rhythm is another key poetic quality of gesture. Beat gestures, simple gestures that lack any iconic or indexical relation to a referent, are used to mark emphasis in the flow of discourse. It's important to note that the vast majority of gestures have a strong rhythmic dimension as they synchronize with the point of peak prosodic emphasis in an utterance. In fact, rhythm is a key component of coordination dynamics in discourse production and we can think of GPs as rhythmic prosodic pulses that temporally and semantic couple speech and gesture.

The Poetics of Gesture in Schizophrenic Discourse

One striking example of poetics in schizophrenic discourse is “gestural clang.” Clang associations in speech or gesture occur when the selection of a gesture or word seems to be motivated more by formal similarities than pragmatics. One case of a clang gesture by an individual with schizophrenia appeared in the following segment of discourse (Forrest 1974) [brackets represent the extent of gestures, bold text indicates the meaningful gesture stroke, underlined text represents a held gesture, and italics indicate that the material was sung] (Fig. 2):

- [to have **rest**]
[cause it's **like**]
1. [**cause**]
 2. [**it's gotta be balanced**]
 3. **it's you know what they**]
- [say *see saw*
knock on the door
and they say]

Fig. 2



jack shall have a new master
he shall have
but a penny a day
because he doesn't work
any faster]
 [and it **come to the time**]
 [that **you** not]
 [able]
 [to **do**]
 [at]

4. [do][o]

[do]
 [do]
 [do]
 [do]
 [for yourself]
 [as **you**]
 [had]
 [been]
 [able]
 [to **do**]
 [I]
 [as **ya**]
 [and **it**]
 [and **this is when**]
 [and]

At the beginning of this passage, the woman rocked side-to-side while she depicted the form and motion of a seesaw and then she froze in place at point 1. At point 2 she uttered, “it’s got to be balanced” and shifted her hands in an iconic image of a balance (the type that is used to compare the weight of objects). The balance has a strong iconic overlap with the image of the seesaw and this iconic similarity between a balance and a seesaw (the gesture performed up through point 1) triggered a gestural clang, an intrusive incongruent gesture based on formal associations that disrupted her flow of thought. After her balance gesture at point 2, she returned to iconically portraying a seesaw in motion at point 3 while beginning to sing a nursery rhyme.

Rhythm is also another strong motivating factor for how this woman’s discourse unfolded along poetic lines. For example, when she uttered the perseverative string of “do’s” in the example above, she produced an odd staccato rhythm with deictic beat gestures on each instance of “do.” At point 4 she uttered “[do][o]” and made two rapid deictic beat gestures that changed location. These rapid gestures both occurred during the brief production of one syllable. Normally, rapid beat gestures appear once a syllable at most. This pattern of excessive beat gestures synchronizing with perseverated lexical items occurs multiple times throughout this woman’s extended discourse. She seems to attend to the poetic rhythmic qualities of her speech and gesture to the detriment of mutual understanding.

In the discourse segment above, the woman produced an overabundance of repetitive gestures to the point of perseveration. For instance, at point 5 in her discourse she perseverated the balance gesture by repeating it four times in rapid succession. Some speech/gesture combinations were repeated contiguously, while at other times they were oddly interspersed throughout the discourse. Normally, poetic relationships between gestures lead to creative and productive associations between GPs in discourse, but the associative chaining in schizophrenic discourse has the feel of unfettered poetic projection, where formal similarities govern the discourse production process instead of the social context constraining poetic associations.

Semiosis in Schizophrenia

The abnormal interpretative stance that individuals with schizophrenia take towards language extends to signs in general. Individuals with schizophrenia may create delusional worldviews where conventional signs can become “signs from the almighty” or secret messages from the government. They find deep meaning in signs that others would see as simple indexical or iconic relationships. This tendency to over-interpret among individuals with schizophrenia is in line with research on perception in schizophrenia (visual, linguistic, or otherwise), where it has been found that there is a failure to properly filter stimuli so that salient features become the focus of attention (Perry et al. 1999). Instead, many features of stimuli (including linguistic) that would normally fade into the background become all-too-meaningful. This issue with attention can be viewed as another manifestation of impaired cognitive coordination in schizophrenia (Phillips and Silverstein 2003).

In schizophrenic discourse, abnormal affective salience can significantly influence social coordination and lead individuals to read hidden, and often threatening, motivations behind other people’s words and gestures. Following Phillips (2000), we can better understand the altered semiosis in schizophrenia by turning to Peirce’s triad of sign, object, and interpretant (1897). In a conversation one person produces a sign (a word or gesture) that refers to an object and this activity engenders an interpretant. An interpretant can be considered the resultant thought or interpretation in the other person’s mind, but, importantly, the speaker his/herself becomes an interpretant of their own unfolding speech or gesture (Phillips 2000, p. 28). For a speaker, “A particular thought is then both the *interpretant* of the thought that precedes it and the *object* of the interpretant thought that succeeds it” (Phillips 2000, p. 27). All discourse, no matter how monologic, has an inherently dialogic character to it. In a sense, discourse is a chain of interpretants regardless of how many people the signs emanate from.

In conversation, a speaker can occupy the position of the signifying agent, object, or interpretant at different points in time and sometimes more than one simultaneously. One of the core issues with semiosis in schizophrenia is that individuals with schizophrenia often take indexical (conventional or natural) signs and interpret them as symbols directed specifically at them (Phillips 2000). For example, often, the rustling of leaves is a simple index of wind because the wind is the physical cause of the sign. Individuals with schizophrenia may believe that they are the direct object of this indexical sign (the rustling leaves caused by the wind),

and interpret the sign as being a deep symbolic message from a signifying agent (Phillips 2000, 30). The rustling leaves become a symbol sent from God, the universe, or any other hidden agent who is controlling the wind.

Individuals with schizophrenia may also experience “delusions of reference” in which they believe that what they hear on the radio, TV, or overhear from other people’s conversations contains direct reference to them (Bucci et al. 2007). Delusions of reference are related to concept of “semiotic agency,” which is the ability to interpret or identify meaningful objects in the world (linguistic or otherwise) that were created by a (sometimes implicit) signifying agent (Tylén 2007). In Tylén et al.’s (2009) study concerning semiotic agency people were shown images of objects, e.g. a photo of a red iceberg or an image of appliances on a kitchen counter, and they had to judge whether the photo contained a meaningful object created by a semiotic agent. As red icebergs are very unusual, people construed it as meaningful (Tylén et al. 2009). Alternatively, the appliances on a kitchen counter were arranged in a familiar manner and were not judged to be meaningful (Tylén et al. 2009). The higher the degree of order and symmetry in an object or scene (its perceived compositionality), the more likely people will be to find communicative intent behind it (Tylén et al. 2009). For instance, the chaotic rustling of leaves is a common natural index of the wind to which we attribute causal, but not semiotic, agency. In schizophrenia, individuals find hidden symbolic meanings behind verbal and nonverbal signs as in this aforementioned example:

What about a cougar? What would you associate a ‘gar’ with? What is a ‘gar’?
See this is what I’m telling you about these letters coming together. I separate them out. They indicate people’s desires. (Oltmanns 1984)

This individual was interpreting other people’s desires behind unconventional signs. At another point in this conversation he described how he had discovered a secret hand gesture that people were directing towards him so as to indicate their desire for a romantic relationship (Oltmanns 1984).

Conclusion

In schizophrenic discourse, the individual utterances are generally not subordinated to higher-level discourse topics, which leads to a general sense of incoherence. However, this incoherence is not without form, as the poetic associations between and within individual utterances often govern the direction discourse takes. What I have proposed is that spontaneous poetics plays an important role in the microgenesis of discourse in typical and atypical individuals. The function of poetics in discourse formation, on the micro and global levels, is to allow for unpredictability, originality, and the scaffolding of emergent discourse. However, poetics only becomes purposeful if it helps establish productive new semiotic relationships, otherwise, we end up with poetics for poetics sake. The poetic associations, to some degree, have to fit into a contextual framework that others can interpret in order for successful communication to occur. Even if schizophrenic discourse seems impenetrable to others, this doesn’t mean that it does not bear meaning for those who produce it.

The disorganization of schizophrenic discourse can be partially attributed to the global impairments in cognitive coordination (Phillips and Silverstein 2003) and cognitive control (Chambon et al. 2008) in schizophrenia. In discourse production, this can manifest itself as a global failure to adequately coordinate, control, or inhibit the local “poetic” self-organization of utterances. From a biosemiotic perspective, meaning-making in individuals with schizophrenia is enacted through the distributed coordination of social, individual, and neurobiological processes. Changes in the low-level dynamics of neurobiology in schizophrenia do not mechanistically determine discourse production, but they do cascade up through the individual and social levels of coordination. The higher-level hyper-reflexive attitude that individuals with schizophrenia have towards language emerges out of the low-level neurobiological dynamics and simultaneously reciprocally determines these same low-level dynamics. This simultaneously hyper-reflexive and poetic mode of semiosis in schizophrenia often leads individuals with schizophrenia to find deep meaning in, and semiotic agency behind, coincidental relationships, whether in speech, gesture, or objects in the world.

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