Neologisms in 'Word Salad': How Schizophrenic Speakers Make Themselves Misunderstood
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Schizophrenic Language

Confusing language has been considered an archetypical symptom of schizophrenia ever since Bleuler named the disease in 1911. Even a short conversation with a thought-disordered schizophrenic[3] is sufficient to demonstrate that, communicatively, something has gone awry:

BC: Lukewarm is real free, hot or cold-warm one is false.

KC: Lukewarm is false?

BC: Lukewarm is real in a manhood. Hot isn't in a man, a woman uses cold. One (unint.) The Bible says, Revelation says, 'you're neither hot or cold, lukewarm.' That's the rewritten-
-wrote down all that suffer stuff an' all the plagues. I know who it was -- Michael.

KC: Michael?

BC: Well, this friend of mine. He calls himself the arcmain. I call him the arcmain. He didn't know who he was. Didn't keep reminding himself. He fell. Jim James took over. He's more, ah, we call adequaa. He knows Jesse James.

KC: He's more what?

BC: Both of 'em are. Our family tree to Jesse James. My family quest took me to the fill, boils me down to the name of Bodeen, which was Jesse James Bodeen. I think, now how the hell's that? I started back in 1948. I didn't live in 1986. But somehow, it's all coming back. Reminds me that he did. Because they kick me an' shoot, y'know, an' still remember a gun, y'know, and it comes back to me.

The exact linguistic reasons for the incoherence of linguistic speech, however, remain largely unelucidated. Traditional psychiatry (cf. Gerson, Benson & Frazier, 1964) assumes that schizophrenic language is linguistically normal, but it is normal language used to talk about bizarre thoughts. Thus, it is held that schizophrenic speech is confusing because schizophrenic thought is confused, and that language per se is not affected. Alternatively, it has been claimed that the deviance of schizophrenic speech is caused by an "inter-mittent aphasia" that "disrupts the ability to match semantic features with sound strings comprising actual lexical items in the language" (Chaika, 1974). In many ways, the speech of thought-disordered speakers is similar to that of jargonaphasics, and it is possible that a real language impairment is involved, similar to language impairments associated with focal brain damage. It has also been proposed that the speech of schizophrenics, while correct on the level of lexical retrieval, of morphology and of syntax, breaks down on the level of discourse organization (Rochester & Martin, 1979). Schizophrenic speakers, it is claimed, are unwilling or unable to take the listener's communicative needs into account. Each of these possibilities places the communicative failure at a different level,

so they are not mutually exclusive. Any or all of them may prove to be the explanation for the perplexity of the schizophrenic's conversational partner. Such issues cannot be resolved in the present study, but they are presented to provide a glimpse of the "big picture" of which neologisms form an important part.

Neologisms of Schizophrenic Language

Neologisms are often invoked as symptoms of the pathological nature of schizophrenic speech. It is not clear, however, why neologisms per se should be considered pathological. All speakers coin words. Listeners usually understand such coinages, and indeed often do not recognize them as novel. The ability to create and to comprehend unfamiliar words gives great power and flexibility to human language. It is important, therefore, to take a closer look at the neologisms of schizophrenic speech, and determine the ways in which they differ from everyday word coinages. Are schizophrenic neologisms morphologically deviant? Are they linguistically well-formed, but used to express meanings that surprise listeners? Or are they confusing because they are coined in contexts that provide the listener with insufficient information to compute an acceptable meaning?

In this paper, I will show that different neologisms are deviant in different ways. Thus, each of the preceding questions can be answered affirmatively for a subset of the corpus. Some schizophrenic neologisms consist of deviant combinations of morphemes (about 1/3, listed under "*" in Table 1.) Others, however, appear to be structurally well-formed, but have meanings that seem very strange to listeners. The extent of this, however, is difficult to determine, because most of the neologisms occur in contexts that are already so confusing that an intended meaning cannot be computed with any certainty. Each of these problems contributes to the oddness of schizophrenic neologisms, and to the incoherence of schizophrenic speech.

Table 1 Word-formation devices used

Device	#	*	Examples
Blending	37	NA	
syntag-	3	"	"strange & more <u>materious</u>" (mysterious + material)[1]
matic			(Fr) <u>scorpinant</u> (scorpion + piquant (stinging))[7]
associa-	28	"	<u>neuralgiers</u> (neuralgia + Algiers)[4]
tive			(Fr) <u>voiseuses</u> (voisines (neighbors) + fem.voyeurs)[7]
unknown	6	"	<u>carstegial</u> (carriage + vestigial?)[8]
			<u>eyecudescence</u> (eye + ?? + incandescence?)[1]
Compounds	35	2	"a <u>sequence-module</u> to a <u>zero-sequence-module</u>"
			"I would have to have a <u>shamrock-cave</u> repave"[1]
Prefixed	13		"the <u>semi-centrifugal</u> fluids of an inkpen"[1]
Suffixed	23		"<u>Catholically</u> insinuating pains"[4]
Conversion	5	1	<u>blued off</u> (because a letter returned marked in blue)[4]
			"The devil seeing you becomes <u>ired</u>"[5]
Unknown	4	NA	"He still had (<u>faʤ</u>) with (<u>tekraimz</u>)"[6]
Clipping	2	2	"He's more, ah, we call <u>adequaa</u>"[2]
Rhyme re-			"I like to be <u>abberscattered</u>"[2]
duplic.	<u>1</u>	<u>0</u>	
	120	25	..... 25/79 deviant (excluding blends & unknowns)

= number of times device applied
* = number of times device applied incorrectly

To obtain these figures, I analyzed a corpus of 109 neologisms. Twenty-nine of them came from transcripts of half-hour conversations with two patients diagnosed as thought-disordered schizophrenics, whom I shall call AB and BC. The other 80 neologisms were gleaned from other reports in the literature. (The number of uses of word-formation devices is greater than the number of neologisms because several were formed by application of more than one device.)

The word-formation devices used by schizophrenic speakers are the same devices used in normal coinages. There are, however, some interesting quantitative differences. Blending, which is relatively rare in English word-formation (Marchand, 1969) is the most frequently used way of constructing neologisms in this corpus. Conversion or zero-derivation, on the other hand, which is generally very common, (Clark & Clark, 1979) is quite uncommon in this corpus. These differences are striking, and merit some discussion. It is possible that they reflect a bias in the observer, rather than in the speaker. Blends, being rare, may strike listeners as more novel than conversions, which are familiar forms used in novel ways. This is probably an insufficient explanation, however, because in many cases it is the meaning, and not the form, which draws the listener's attention to a neologism.

Noted after each device is the number of times it was used incorrectly, from a purely formal point of view. I have not listed the number of times neologisms were used to express bizarre meanings or the number of times that a meaning could not be computed on the basis of context, because there are no good objective criteria for identifying such deviant uses of word-formation devices. It is extremely difficult to assess even the structural well-formedness of a word on the basis of structure alone. A simple illustration can demonstrate the problem, which extends to the entire corpus. Most of the compound neologisms were simple nominal compounds, such as those in "the relativity of a sequence-module to a zero-sequence module!" Only two out of 35 were unambiguously deviant. Both of these were incorrect phrasal compounds, such as he-was-rightly,[4] used by a patient who said she'd been "he-was-rightly confined," meaning that the person who had confined her felt that he had been right in doing so. The other compounds appear to be correct, but only if the speaker intended the same modifier-head relationship that we as listeners assume. That is, sequence-module and zero-sequence-module are correct nominal compounds only if they refer to a kind of module, and not to a kind of sequence. The context gives no clue as to which is intended. Either (or neither!) makes sense. Without access to the speaker's intended meaning, we can only guess about the structural well-formedness of most of the neologisms. With that caveat in mind, it will be helpful to go over in detail some of the ways in which particular neologisms were deviant.

Delusional Meanings

The world of the schizophrenic is marked by hallucinations, delusions and perceptual distortions. Most people do not need words to describe these experiences, which are alien to them. For this reason, the English lexicon is inadequate for the schizophrenic speaker who wishes to talk about such things. Auditory hallucinations ("hearing voices"), for example, trouble many schizophrenics, and a special

vocabulary is needed to talk about them. The patient who claimed the voices were brought to her by an "aero-telephone,[4] the latest invention," was using English word-formation rules productively and correctly. However, the neologism strikes listeners as odd because the meaning is odd. In the same way, heart-voices,[4] coined by another speaker who perceived the voices as emanating from his own body, is a well-formed coinage that describes a bizarre concept. To snortie,[4] or to "talk through the walls," is similarly possible only in the patient's delusions. Carstegial,[8] defined by the patient as "birth out of darkness from a broken baby carriage" (apparently a blend between carriage and vestigial), is an unusual amalgamation of many ideas included in one lexical item. Fluids that are only partially centrifugal ("semi-centrifugal fluids")[1] and a cycle with six and one-half gears ("an ordinary 6 1/2-speed")[1] are also concepts for which there is little need in the conventional lexicon.

Morphological Anomalies

As seen in Table 1, about 1/3 of the neologisms were deviant in form. Blends were excluded from this count, because there are no good criteria for determining whether a blend is well-formed or not. Most of the deviations from correct morphological rule application involved conventional stems plus conventional morphemes combined in various unconventional ways. In particular, there was affixation to a stem of inappropriate form-class, inappropriate composition or inappropriate phonology, overextension of a device which is productive only within a limited domain, and an unmotivated stem change. In addition, many of the morphemes used to construct the neologisms came from unconventional sources, such as prior utterances, rather than from a "dictionary-like" association between the morpheme and a discernable meaning. Following are examples and explanations of each type of anomaly.

Some neologisms were anomolous because they were composed of prefixes and suffixes attached to stems of the wrong form-class. Evering,[5] in "Because it is a sort of hydraulic evering," is incorrectly formed because -ing does not productively attach to adverbs. Deconvoltage,[1] in "the relativity of deconvoltage and high convoltage," is inappropriately formed because de- properly attaches to denominal verbs (e.g., debutton) or to verbs of process (e.g., desalinate), and to the deverbal nouns they give rise to (e.g., debuttoning, desalination.) Voltage, a noun, should not be prefixed with de- without a verbalizing suffix such as -ing. Hydrasee,[5] in "through the roots of the hair and hydrasee," is anomalous because hydra- only attaches to nouns or to verbs derived from nouns (e.g., hydrogenate.)[4] Combustronability,[10] in "the process of combustronability," is deviant because -ability is normally added to verbal bases, and -tron is nominal (e.g., cyclotron, electron.) In productive usage (disregarding such frozen forms as bicycle which have entered the everyday lexicon) bi- prefixes technical adjectives and adverbs of time, so bipen[1] in "a bipen that holds the semi-centrifugal fluids of an inkpen," is incorrect. In addition, both bipen and hydrasee are anomalous because bi- and hydra- are both technical in productive usage. They do not normally combine with everyday words like see and pen because such usage is an inappropriate mingling of registers. However, as will be discussed later, bipen is so similar in phonological shape to

biplane, one of the few everyday words containing bi-, that blending seems to be a more likely source for this neologism than derivation.

Within a form-class, structural constraints can define the class of words that may combine with particular affixes. For example, in English the adverbial suffix -ly does not ordinarily combine with compound adjectives (except those of the type heart-rending), so skintightly[2] in "Something that I can skintightly form," and he-was-rightly are morphological anomalies for this reason. Structural considerations can also govern which of several allomorphs to use. According to Aronoff's (1976) formulation of the -tion, -ation, -ion series, -trip is not one of the bases with which -tion productively combines. Cause-a-tription,[1] in "the relativity of a cause-a-tription," should contain the unrestricted allomorph -ation. Factuated,[10] in "all formerly stated, not necessarily factuated," involves overextension of a pattern of only limited productivity. Although actual/actuated and equal/equated represent a real alternation, factuated is an unacceptable overextension of this very restricted pattern. Recluded,[2] apparently a participial form of recluse in "Everything is cool, pat, recluded," is an example of an unmotivated stem change, perhaps on analogy with persuasive/persuaded. However, blending is a likely source for this neologism as well, since occluded and secluded are similar in both form and meaning.

Phrasal compounds like he-was-rightly have already been cited as examples of incorrect application of regular word-formation rules. Clipping was also susceptible to misuse. Clipping typically involves loss of a syllable or more, and to clip a single final consonant in forming adequaa[2] from adequate is highly unusual. Clipping typically does not change meaning, but only register (e.g., mathematics/math varies in degree of formality) or connotation (clipped forms "feel" more familiar or affectionate.) The clipping of protection to form tection,[3] meaning "protection in the good sense" involves a more radical meaning change than clipping does conventionally.

Many of the elements of which the neologisms were composed appeared to have been chosen, not on the basis of an intended meaning, but rather to fit into certain repeatedly used patterns. Many schizophrenics have "predilection themes" that intrude inappropriately on discourse of any topic. For example, AB had recurring delusions involving robotization and electronics. In a simple naming task, he called a ballpoint pen " a bipen, a bipen that holds the semi-centrifugal fluids of an inkpen." His obsession with technology led him to answer an everyday question with a barrage of pseudo-technical jargon. The elements of most of his neologisms were consistent with this theme. "Predilection morphemes" such as cath-, -on, volt-, trip, bi-, ang- and semi- all suggest an overall thematic coherence, although a single topic was not discernable.

Entire phrases were sometimes used as single words, such as cause-a-tription and he-was-rightly. BC once said "Everything is cool, pat, recluded," and a few minutes later produced the neologism padrecluded.[2] A French-speaking patient of Lecours & Vanier-Clement said "Vous êtes arrivé a capital" (you have arrived at capital), and produced the neologism acapital[9] in a completely different context. A patient of Bleuler's reported that she used wuttas[4] to mean doves, and a likely source is the common phrase what a.

Many schizophrenic speakers have "routines" that they use repeatedly. For example, AB used the routine "the relativity of X and -X," in two instances of which, neologisms occurred: "the relativity of deconvoltage and high convoltage" and "the relativity of a sequence-module to a zero-sequence module." These pairs of near-opposites may have been coined, not because they refer to a specific intended meaning, but because they fit into slots in a favored routine. The tendency to juxtapose negatives, often at the expense of correctness of form and clarity of meaning, is shared by many schizophrenics. Bleuler's patient spoke of lie-truths, the "lies which we present as the truth," and Lecours & Vanier-Clement report ouvre-ferme, pair-impair, hiver-été, fin-debut and jour-nuit (open-close, even-odd, winter-summer, end-beginning and day-night.)

Pragmatic Problems

The neologisms pose pragmatic problems for the listener, as well as morphological ones. One of the constraints on conventional word-formation is that the coinage of otherwise well-formed words can be blocked by pre-existing words in the lexicon (Clark & Clark, 1979.) We do not coin words to express a certain meaning if there is already a word with that meaning, and we do not create a new form/meaning match if the form conventionally expresses a completely different meaning. The coinage of leadered[2], then, to mean "action that a leader performed," should be prevented by the existence of led which already has that meaning. However, here again the correctness of the form depends crucially on the intended meaning. The speaker, BC, may not have meant to say "action that a leader performed," but rather something different. The context, in which leadered appeared to mean "messed up ... scattered around," supports this suggestion. In fact, leadered in this context appears to be antonymous with led. On the other hand, apartment[4], meaning "thing apart," should be blocked by the existence of apartment meaning "a set of rooms." The poignant statement "As a child, I was already an apartment" accurately expresses the isolation felt by many schizophrenics, but is confusing to the listener because apartment conventionally is assigned a different sense.

Listeners are usually safe in assuming that word meanings remain stable from situation to situation. But the meanings of many morphemes in the corpus seemed arbitrarily different from their conventional meanings. The meanings of many of the neologisms cannot be derived from the meanings of the component parts. Leadered, for example, used with a meaning antonymous with "action that a leader performed," shows idiosyncratic semantic assignment to the component parts leader + ed. One or both of them has been assigned the meaning of "opposite of," in addition to the conventional meaning. Similarly, the removal of pro-, which conventionally means "in favor of," should not also remove all the negative aspects of protection. The conventional meanings of snort and the diminutive suffix -ie in no way predict that the meaning of snortie will be "to talk through the walls."

A new word can bewilder listeners if the speaker is judged not to have "authority" to coin such a form. For example, -on is a productive suffix in English, with the meaning "elemental particle." It is most frequently used to name new subatomic particles, by the scientists who discover them. It is also used to mimic scientific expertise in the special domain of science fiction, as in the naming of

Superman's home planet Krypton. The phrases "...<u>peeron</u> flow of
the volt it generated...at the same time as the <u>torron</u> flow...what
he did with the <u>cathon</u> voltage...and without the <u>trecon</u>..."[1] confront
the listener with a dilemma. If spoken by a particle physicist, these
uses of -on would be compatible with our criteria for assigning its
conventional meaning. We would comfortably assume that the neologisms
named the four latest subatomic particles, of which we had been pre-
viously unaware. However, the same words, if spoken by someone we
have no reason to assume know more about science than we do, seem
much less likely to fit with the conventional meaning. Listeners
are presented with two unsatisfactory alternatives: either they as-
sign the conventional meaning, thereby granting the speaker scientific
expertise that he clearly does not possess, or no real-world referent
is possible, because the speaker is constructing words from the realm
of science fiction.

The most glaring pragmatic problem facing the listener who strives
to decode these neologisms is not a property of the neologisms them-
selves. Rather, it is the contexts in which they appear. For exam-
ple, although <u>deconvoltaging</u> is incorrect because of a verbal prefix
on a nominal base, remedying the structural problem with compatible
base and prefix does not render the meaning any more clear. Neither
"honestly connectable to the relativity of <u>deconvoltaging</u>" or "hon-
estly connectable to the relativity of <u>nonconvoltage</u>" is any more
helpful than was the original in providing the speaker's intended
meaning. In the same way, "different relativities allowed within the
coangfields of the relativity of a <u>cause-a-tripation</u>" is no more mea-
ningful than was <u>cause-a-tription</u>. "Something that I can form in a
<u>skintight manner</u>" steers the listener no closer to the speaker's
intended meaning than did <u>skintightly</u>.

Many of the neologisms appear in contexts in which it would be
hard for any word to make sense. Try to imagine, for example, words
that fit meaningfully into the following contexts:

If I could really duplicate the life processes, I see what's
data _____.
The one that is contracting at the speed of no harmony the vi-
sional _____.
No water, no more would drain the voltage of the proper current
at the same time as the _____ flow.

Clearly, the problem confronting the listener who attempts to decode,
respectively, <u>corpuller</u>,[1] <u>eyecudescence</u>[1] and <u>torron</u>,[1] is not just one of
deviant morphology or bizarre thought content. These neologisms stick
out because the speaker has failed to provide the listener with a con-
text that makes their meaning clear, and words that have no meaning
always stand out as odd. Note, however, that although these contexts
do not cohere around any discernable topic, a special kind of coher-
ence is nonetheless present. In each case, an intermediary word,
associated in meaning with the context and related in form to the neo-
logism, can be posited: data...(corpus)...corpuller; visional...
(eye)...eyecudescence; water...(torrent)...torron flow.

Choice of word-formation devices affects the accessibility of
meaning of coinages. The meanings of blends and compounds, both highly

favored by schizophrenic speakers, are very contextually dependent.
A shamrock-cave, for example, could be a cave where shamrocks grow,
a cave that is shaped like a shamrock or a cave that is associated in
an infinite number of other possible ways with shamrocks, and the re-
lationship of shamrock to cave could vary from context to context.
The use of contextually dependent devices in hopelessly obscure con-
texts renders neologisms opaque. The contribution that contextually
dependent word-formation devices make to the overall vagueness of
schizophrenic speech is probably greater than suggested in Table 1,
because the number of blends indicated there is overly conservative.
Many of the apparent morphological misderivations can be reanalyzed
as blends. For example, cause-a-tription is so related in form and
meaning to prescription, which is a very important notion to a re-
peatedly hospitalized schizophrenic, that contamination is very likely.
Recluded and biplane have already been mentioned as likely candidates
for formation by blending.

Discussion

Schizophrenic neologisms differ from most word coinages in struc-
tural, semantic and pragmatic ways. While structural abnormalities
and bizarre meanings contribute to the listener's perplexity over
schizophrenic neologisms, an even greater contribution is made by the
overall organization of schizophrenic speech. Most normal innovations
(and indeed, most speech errors) go unnoticed because they appear in
contexts that provide many clues to the intended meaning. Contextual
information normally allows listeners to compute a meaning, and words
which are meaningful do not usually strike listeners as odd.

The inability or unwillingness of schizophrenic speakers to
adequately account for the needs of the addressee is reflected in other
aspects of their language use. They do not, for example, pause or
"set off" their neologisms with special intonation to cue the listen-
er to pay special attention or to allow themselves a moment in which
to gauge whether the listener is "with them." Their intonation could
be described as an "excited monotone," not at all amenable to interrup-
tion or interaction. Often schizophrenic speakers do not respond at
all to queries, interruptions or other obvious signs of lack of com-
prehension.

It may seem both contradictory and unenlightening to claim that
the problem with schizophrenic neologisms is that some are morpholo-
gically anomalous, others are well-formed but have strange meanings,
and still others are coined in pragmatically inappropriate contexts.
Such a description, while accurate, lacks unity, and does not explain
what schizophrenics are doing with language. However, it may be mis-
leading to talk about "schizophrenic language" in the same way one
talks of French or English. Schizophrenics form a very heterogeneous
population, and schizophrenia, like cancer, may be not one disease
but many. In the past, work has focused on the ways in which "schizo-
phrenic language" differs from "normal language," and this perspective
may be the source of many of the contradictions in the literature.
In the future, detailed linguistic analyses may prove to be of great
value in differentiating different patient populations.

In view of the inaccessibility of the schizophrenic speaker's
intended meaning, the possibility that there is no intended referen-
tial meaning must be considered. Many qualities, including overuse,

connotative rather than topical coherence, absence of anticipatory
(syntagmatic) blends and anticipatory speech errors, tendency to use
routines and prefabricated sequences, and unvarying intonation, are
compatible with the proposal that thought-disordered schizophrenics
are using language non-referentially. However, the speech of young
children exhibits many of the same patterns and many of the same
pragmatic problems found in schizophrenic speech. Young children often
confuse their addressees because they have not yet mastered the com-
plex task of taking the listener's needs into account when they or-
ganize their discourse. Thus, the confusing qualities of schizophrenic
speech are also compatible with the proposal that thought-disordered
schizophrenics lack the concentration to organize their speech with
another's needs in mind. Further research, including detailed com-
parisons of schizophrenics' with children's discourse and analyses
of schizophrenics' use of conventions for presenting assumed versus
new information, should be directed towards resolving how schizophrenic
speech is organized from the speaker's point of view, and not just
how it is confusing from the listener's point of view.[5]

Notes

1.I would like to thank Eve Clark, Sophia Cohen, Susan Gelman, Barbara
Hecht, Will Leben, Kurt Queller and Elizabeth Traugott for helpful
discussion and suggestions on this project.
2.A more descriptively apt title was coined by James D. McCawley,
who suggested that this paper be renamed "Neologisms in crunchy peanut
butter word spread." While this term accurately reflects the hetero-
geneity and intermittent nature of schizophrenic communication break-
downs, 'word salad' is conventionally used in the medical literature.
3.In the psychiatric literature, thought-disordered schizophrenics are
the subgroup of schizophrenic patients with the most confusing lang-
uage.
4.Cameron, who reported this neologism, interpreted it as hydrasee,
not hydrasea or hydracy, because it appeared in a discussion of color
and blindness.
5.I am grateful to Sue Foster, who pointed out to me many of the
striking similarities between schizophrenic and child discourse, and
to Leonard Talmy, who suggested the analysis of neologisms' positions
within sentences as a means of getting at the speakers' intentions.

Sources of Neologisms

1 & 2, from patients AB and BC, respectively
3-10, from references, numbered accordingly

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