

Soliloquy for linguistic investigation

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This study advocates the investigation of soliloquy as a new approach in pragmatics research. The primary function of language is arguably to communicate with others, but language is also used to think. Thoughts constantly emerge in confluent streams of images, concepts, and ideas within the mind; to grasp and manage them, we need language. An analysis of soliloquy can open a window to a better understanding of our mental activities. Based on experimentally obtained soliloquy data in Japanese, three issues are considered: gendered language, the sentence-final particles *ne* and *yo*, and the *ko-so-a* demonstratives. It is demonstrated that soliloquy can shed new light on these widely studied topics. The conclusions reached include that (a) Japanese gendered language is more gendered than recent studies in the field claim, (b) *ne* and *yo* are used to monitor and control the speaker's internal information processing, and (c) the deixis-anaphra distinction is not clear-cut.

1. Introduction

Soliloquy (*hitorigoto* in Japanese) is the utterance of thoughts not addressed to another individual.¹ It is sometimes thought of as talking to oneself. This paper advocates in-depth investigation of soliloquy as a new approach in pragmatics research.

Language is recognized as an instrument of communication and thought. The volume of research exploring language as a vehicle of communication is enormous, and our knowledge of various linguistic devices for effective communication has advanced significantly in recent decades. The empirical exploration of language as a tool for thinking, by contrast, has been scarce, with the notable exception of the study of **private speech** in psychology. The present study argues that research on soliloquy can foster further progress in our understanding of the nature of language and its use because soliloquy provides valuable data for examination of how, and possibly why, linguistic structures differ between communicative and non-communicative settings.

Some researchers consider speech and thought to be exclusively dialogic. That is, the speaking-self and the talked-to-self exist even in soliloquy, mirroring normal conversational exchanges. Bakhtin's (1984) dialogism is an example of this conception, in which all human discourse is seen as a complex thread of dialogic interrelations with other utterances. He writes:

Each person's inner world and thought has its stabilized social audience that comprises the environment in which reasons, motives, values and so on are fashioned [...] In point of fact, word is a two-sided act. It is determined equally by whose word it is and for whom it is meant. As a word it is precisely the product of the reciprocal relationship between speaker and listener, addresser and addressee. Each and every word expresses the 'one' in relation to the 'other'. I give myself verbal shape from another's point of view of the community to which I belong. (p.86)

This idea of dialogue is consistent with Vygotsky's (1934/1986) thesis of the social origins of private speech (discussed below).²

Even if soliloquy is essentially dialogic, there may well be profound differences between these two modes of discourse. If the speaker and addressee are identical, there is no gap or discrepancy in beliefs, assumptions, and relevant background knowledge, and the speaker is not obligated to consider the addressee's knowledge and perspective. As a result, the information structure of soliloquy should inevitably differ from communicative conversations. As a further example, we could easily speculate on the absence of linguistic politeness in soliloquy because the speaker does not need to consider the possibility of threatening the addressee's face.

In order to investigate how communicative and non-communicative intention influences utterances, an experiment was conducted in which soliloquies of native speakers of Japanese were examined. The present study reports an analysis of these experimental data and discusses the findings in order to suggest further directions for investigation using this promising approach.

The organization of this paper is as follows: Section 2 provides a brief outline of the research on private speech. Section 3 defines the notion of soliloquy and explains the data-collection method. Section 4 (Gendered speech), Section 5 (The sentence-final particles *ne* and *yo*), and Section 6 (Demonstratives) explore the potential of soliloquy data in linguistic investigation. Section 7 presents the conclusions of the study.

2. Private speech

The study of soliloquy originated with Piaget (1923/2002), who observed kindergarten children talking to themselves as if thinking aloud. For example, a child sitting alone at his table said, "I want to do that drawing, there [...] I want

to draw something, I do. I shall need a big piece of paper to do that” (2002: 15). Calling this phenomenon **egocentric speech**, Piaget argued that it was a result of young children’s cognitive immaturity. That is, when communicating with others, they are unable to take others’ perspectives into consideration, so that their utterances are often incomprehensible to their addressees. Children, for example, frequently employ deixis and pronouns without clear referents. As the child’s cognitive maturity and social experiences grow, Piaget contended, egocentric speech disappears.

Vygotsky (1934/1986), on the other hand, interprets the same phenomenon in a totally different way. For him, the direction of development is not from egocentric and autistic utterances to social, communicative utterances, as claimed by Piaget, but rather, **from social speech to subvocalized inner speech**, that is, thoughts. In other words, Vygotsky argues, young children often think aloud because they have not yet learned to control their thoughts internally.³ Today, Vygotsky’s perspective is commonly referred to as **private speech**, although he himself retained Piaget’s term, egocentric speech. In Vygotsky’s theory, private speech is the link between early socially communicative speech and mature inner speech. He hypothesized that during the early school years, the development of inner speech stabilizes, and, as a consequence, private speech fades away.

Vygotsky contended that private speech serves **self-direction** and **self-guidance** functions. Therefore, the frequency of soliloquy should increase significantly if an obstacle is introduced into children’s activities. He provided as an example a child, ready to draw, suddenly finding something needed was missing. The child would then try to comprehend and to remedy the situation by talking to himself: “Where’s the pencil? I need a blue pencil. Never mind, I’ll draw with the red one and wet it with water; it will become dark and look like blue” (1986: 29–30).

Regarding its formal properties, Vygotsky assumed that as private speech develops into internal thought, it becomes more abbreviated and cryptic. He speculated that, whereas syntactic constituents are more thoroughly expressed in social speech, inner speech consists solely of predicates because the topic of an utterance (typically encoded as the grammatical subject) is already known to the speaker. Private speech is initially similar to social speech, but it is gradually restructured toward the syntax of inner speech.

Although this hypothesis seems to reflect common sense, it has not been verified by experimental studies (Berk 1992). Feigenbaum (1992) reports that between ages 4 and 8, private speech tends to be more fragmented than social speech, but it does not become **increasingly** fragmented. Rather, his data show that private speech becomes longer and more complex with increasing age.

Although Vygotsky’s hypothesis does not accurately capture the reality of language development, abbreviated utterances in adult speech do sometimes convey

the nuances of soliloquy. Zwicky (2005) reports that the omission of “it be” in the extraposition construction sounds like self reflection, e.g., (1):

- (1) a. *Odd that Mary never showed up.*
- b. *Too bad (that) she had to leave town so soon.*
- c. *Amazing that he didn't spot the error.*

Zwicky also reports Eve Clark's observation: “I think it's something of a convention in writing that one uses a lot more ellipsis to convey ‘internal feelings, attitudes.’ Does this spill over to actual spoken usage?” Adult soliloquy in English may have various subtle cues yet to be discovered.

Private speech gradually becomes less noticeable with the passage of time. This fact, however, does not guarantee that children stop producing it, as Vygotsky speculated. In the United States, as well as in many other speech communities, private speech is so stigmatized that we may become embarrassed if caught while soliloquizing. In elderly persons, private speech is frequently regarded as an awkward form of self-defense against stress or as a sign of withdrawal from the social world (Fry 1992). Most children gradually learn this social inhibition and relinquish private speech in the presence of others. Nevertheless, private speech does continue throughout an individual's lifetime (Goffman 1978, John-Steiner 1992). It only becomes more challenging to observe by researchers using traditional methods of study in psychology (Diaz 1992).

3. The research methodology

The data

An experiment was conducted in order to explore the nature of soliloquy in Japanese. Twenty-four subjects (8 males and 16 females, all native speakers of Japanese) participated, each speaking his or her thoughts for 10–15 minutes while alone in an isolated room. The subjects were instructed to speak not to an imaginary person, but, rather, to simply verbalize whatever came into their minds. Other than speaking as much as they were able, they were free to walk around, look at books and magazines, and do whatever they wanted. Their soliloquies were recorded on an audio device and subsequently transcribed. A total of 3,042 utterances, many of which consist of fragmented sentences, were obtained.⁴

All subjects were aware that they were being recorded. Let me first present a brief discussion regarding this data-collection method lest the validity of this procedure, which might seem removed from genuine, spontaneous soliloquy, come into question.

3.1 Soliloquy defined

As a pre-theoretical notion, soliloquy can be defined in three ways: **situational, intentional, or heuristic in terms of form and content**. Situationally, the term *soliloquy* refers to any utterance when no person other than the speaker is present in the speech situation. By this definition, the data to be analyzed in this study clearly qualify as authentic soliloquies because no one else was in the experiment room.

Soliloquy can also be defined with reference to the speaker's intention, i.e., as the manifestation of thinking that is not meant to be addressed to any other individual. With this definition, whether the speaker is alone or surrounded by other people is irrelevant. Even if physically alone, one can speak to a particular person the speaker pretends is present and listening. Conversely, even if one is surrounded by people, one might have no intention of communicating with any of them, and, consequently, not expect any reaction from them. This notion of soliloquy is what interests me. However, with this definition, soliloquy cannot be identified observationally; only the speaker can determine whether or not an utterance is a soliloquy. It is important to note that the recording of naturally occurring soliloquies is not immune from this problem either. Therefore, if one subscribes to this notion of soliloquy, experimentally obtained data are no less qualified as genuine than are spontaneous soliloquy data.

The third way to define soliloquy is based on the form and content of the utterance. This idea, which might be alien to native speakers of English, may be applied in Japanese, where the soliloquy mode of discourse is to some extent grammaticized, although even among native speakers of Japanese the criteria for defining the soliloquial utterance are admittedly murky and subjective. When Japanese speakers verbalize without expecting any reaction from their hearers, they employ certain forms and avoid others. Therefore, when a speaker uses some forms, the hearer tends to interpret the utterance as soliloquy. For example, most speakers recognize such utterances as shown in (2) as soliloquy:⁵

- (2) a. *A, soo nan da.*
 oh so is-the-case
 'Oh, I see.'
- b. *Honto daroo ka.*
 true COP (PRESUMPTIVE) Q
 'I wonder if it's true.'
- c. *Naruhodo ne.*
 indeed SFP
 'That makes sense.'

Soliloquy does not contain addressee-oriented elements, for example, (a) certain sentence-final particles (e.g., *ze* ‘I’m telling you’), (b) directives (e.g., commands, requests, questions), (c) vocative expressions (e.g., *oi* ‘hey’), (d) responses (e.g., *hai* ‘yes’, *iie* ‘no’), (e) pragmatic adverbials of various sorts (e.g., *sumimasen ga* ‘excuse me, but’, *koko dake no hanashi dakedo* ‘it’s between you and me’), (f) hearsay expressions (e.g., *(da)sooda/(da)tte* ‘I hear’), and (g) addressee honorifics (e.g., *desu/masu*). As a positive indicator, soliloquy frequently involves exclamatory interjections (e.g., *waa, maa, hee, huun*) and exclamatory sentence-final particles (e.g., *naa, kana, ya*).

Although the validity of this heuristic definition has never been scrutinized, a considerable number of researchers on various topics in Japanese linguistics present data as soliloquy, e.g., Uyeno 1972, Kuroda 1979/1992, Cheng 1987, Moriyama 1989, 1997, Maynard 1991, 1993, Nitta 1991, Hirose 1995, Tokui 1995, Usami 1995, Ono and Nakagawa 1997, Suzuki 1997, Washi 1997, Okamoto 1999, Izuhara 2003, Shinzato 2004, Noda 2006, Hirose and Hasegawa 2010, to name a few.

No matter how soliloquy is defined, spontaneous and experimentally solicited data may be deemed equally valid and equality problematic. One might argue that the real issue here is the subjects’ awareness of their being recorded, which undoubtedly restricts the content of their speech. I defend my experimental methodology on two grounds. First, I am more interested in the **form** than in the **content** of soliloquy, and form is less susceptible to the impulse of speakers to defend confidentiality than is substance. That is, speakers use the same inventory of linguistic resources at their disposal whenever they speak. Second, recording utterances for research without the subjects’ consent is prohibited in the United States and many other nations. This applies to the recording not only of soliloquies, but also conversations. We must make do with this unconditional constraint.

Surprisingly, however, most of the subjects in my experiment spoke freely, even making reference to personal problems. I usually used my office for recording, and some subjects disliked my possessions. For instance, one subject looked around the room and found *haiku* (Japanese poetry) books and declared (3a); another subject talked about the scroll hanging from a wall and said (3b); the third subject commented on my Dell laptop as (3c). These subjects were sufficiently mature to refrain from expressing such negative comments in the presence of the owner of the articles.

- (3) a. *Uwaa, haiku toka. Aayuu no yada.*
 gee and-alike that-kind thing dislike
 ‘Gee, *haiku* books. I don’t care for them!’
- b. *Nanka chuugoku kusain da yone, kooyuu kabe ni kaketearu.*
 somehow too-Chinese is SFP this-kind wall LOC is-hanging

Uchi, nannimo nakatta kara naa, shodoo mitaina no. ... Ore mo
 my-house nothing-existed because SFP calligraphy-like thing I also
shodoo wa kirai da shi.
 calligraphy TOP dislike and

‘This kind of scroll is too Chinese. My family didn’t have calligraphy things at home. ... I dislike calligraphy, too.’

- c. *Demo, yappari, dezain wa makkintosshu no hoo ga zutto ii*
 but of-course design TOP Macintosh GEN side NOM far better
yonee. Deru mo waruku nain dakedo, yappari, nanka, jenerikku-tte
 SFP Dell also not-bad but somehow generic-QUOT
kanji ga suru yonee. Ato, yasuku tsukutteru kara, buhin
 feeling NOM do SFP and cheaply is-making because parts
ga yasui shi nee.
 NOM cheap and SFP

‘Well, of course, Mac has a much better design. Dell is okay, but it looks generic. And it’s cheaply made of cheap parts.’

We must be cautious about the unusual means of data collection employed in the present study. Nevertheless, until a better method is discovered or invented, this one is deemed most practical.

4. Gendered speech

While male and female speakers likely speak somewhat differently in all of the world’s languages, Japanese is particularly well known for its conspicuously differentiated variations by gender. That is, Japanese spoken by men and by women is frequently differentiated morphosyntactically. Since the late 1970s, this variation, particularly so-called **women’s language**, has attracted considerable attention from researchers in anthropology, gender studies, linguistics, psychology, and sociology, as for example, Ide 1979, Jugaku 1979, Komatsu 1988, Ide and McGloin 1991, Ide and Terada 1998, K. Nakamura 2001, Okamoto and Smith 2004, Inoue 2006, M. Nakamura 2006, Sato 2006.

Based on these and other intensive investigations, an increasing number of researchers have concluded that the characteristics of alleged gendered language in Japanese are not grounded in empirical observations of the way Japanese men and women actually speak. Rather, such characteristics are firmly associated with language ideology as well as the public persona with which speakers wish to present

themselves.⁶ It is, therefore, of interest to scrutinize how such gendered language manifests itself in soliloquy, where the influence of an addressee or bystanders on the speaker's selection of linguistic expressions is minimized.

4.1 Female soliloquies

Of the 3,042 utterances obtained in the present experiment, 2,050 were made by the 16 female speakers (ages between 20s and 50s), and 992 by the eight male speakers (seven in their 20s and one in his 40s). Of the 2,050 female utterances, only 76 (3.7%) involved so-called women's language, as shown in (4). (In the examples below, the first number in the square brackets indicates the frequency of occurrence; the second number indicates the number of subjects who used the designated expression.)

- (4) "Women's language"
- a. *watashi/atashi* (female 1st person pronoun in casual speech)⁷ [21, 10]
Watashi wa anmari Nihon ni kaeranaï kara ...
 I TOP not-much Japan to return because
 'Since I don't go back to Japan so frequently ...'

Atashi-tachi mo jikan ga attara ikerun dakedo ne.
 we also time NOM if-there-is can-go but SFP
 'We can go there too if we have time.'
- b. The beautifier prefix *o* + NP⁸ [15, 5]
Nan te iu o-hana nan daroo.
 what QUOT say flower I-wonder
 'I wonder what this flower is called.'
- c. Referent honorifics⁹ [10, 2]
Kono kakejiku wa donata ga okaki ni natta no kanaa.
 this scroll TOP who (RH) NOM wrote (RH) NMLZ SFP
 'Who did this scroll?'
- d. *kashira* (sentence-final particle)¹⁰ [9, 4]
Konshuu wa atsuku naru no kashira.
 this-week TOP hot become NMLZ SFP
 'I wonder if it's going to be hot this week.'
- e. NP + (*yo*)*ne* (sentence-final particle)¹¹ [6, 6]
 [Shopping for an ottoman in a mail-order catalog]
Nandaka minna onaji yoo na kakko ne.
 somewhat all look-alike shape SFP
 'Somewhat. They all look the same.'

- f. *none, noyone* (sentence-final particle)¹² [6, 5]
A, nanka shizuka ni shiteru to ironna oto ga kikoeru none.
 oh somewhat if-being-quiet various sound NOM I-can-hear SFP
 ‘Oh, if I don’t do anything, I can hear a lot of things.’
- g. *soo ne* (interjection) [5, 3]
Ato wa, soo ne, ano hen no seeri shiyoo kana.
 then INTJ that vicinity GEN organization will-do SFP
 ‘And then, well, I may want to clean up over there.’
- h. *wa* (sentence-final particle)¹³ [3, 2]
Nihon wa atsukatta kedo, ii wa, Kariforunia wa suzushikute.
 Japan TOP was-hot but good SFP California TOP cool
 ‘It was hot in Japan, but it’s nice that it’s cool in California.’
- i. Sentence-final *koto* (nominalizer) [1, 1]
Konaida moratta kiku no hana, maa, yoku motta koto.
 recently received chrysanthemum INTJ well lasted NMLZ
 ‘Those chrysanthemums I got the other day — they really lasted!’

It is notable that the forms listed in (4) were never used by the male subjects in the present experiment.

4.2 Male soliloquies

Male subjects used gendered speech slightly more frequently than female subjects did, although the current male sample population of eight is too small to make reliable generalizations. The number of occurrences of so-called men’s language was 67, or 6.8%, of the total of 992 male utterances (compared with 3.7% of female-style expressions used by the female subjects). However, “men’s language” used exclusively by male subjects was very rare; only first person pronouns fell in this category.

- (5) “Men’s language”
- a. *ore* (male 1st person pronoun) [20, 5]
Ore mo shodoo wa kirai da shi.
 I also calligraphy TOP dislike and
 ‘I don’t like calligraphy either.’
- b. *boku* (male 1st person pronoun) [3, 1]
Soo iu tame ni tsukawareru zeekin nara, boku wa zenzen ii
 such for is-used tax COND I TOP indeed good
o omou kedo ne.
 QUOT think but SFP
 ‘If the tax is used in that way, I think it’s perfectly okay.’

“Men’s language” almost exclusively used by male subjects is listed in (6) and (7):

- (6) a. Vowel coalescence used by male subjects [12, 3]
Aa, maguro ga kuitee. (< *kuitai*)
 well tuna NOM want-to-eat
 ‘I want to eat tuna.’
- b. Vowel coalescence used by a **female** subject [1, 1]
Hayaku Nihon ni kaeritee. (*kaeritee* < *kaeritai*)
 soon Japan to want-to-return
 ‘I want to go back to Japan soon.’
- (7) a. Suppletion (formally unrelated word) used by male subjects [7, 3]
Kono gurai dekkai tsukue ga hoshii. (vis-à-vis *ookii* ‘big’)
 this about big desk NOM want
 ‘I want a big desk like this.’
- b. Suppletion used by a **female** subject [1, 1]
A dekkai Koojien. (cf. *ookii*)
 oh big
 ‘Oh, it’s a big *Koojien* dictionary.’

“Men’s language” used by both sexes in the present experiment is listed below. Given that there were twice as many female subjects as male subjects, the distributions clearly indicate that these expressions are favored more by males than by females.

- (8) a. *yona* (sentence-final particle) used by male subjects [18, 5]
 [Worrying about whether his speech was being recorded properly]
Chanto haitteru yonaa.
 properly recorded SFP
 ‘I hope it’s been recorded OK.’
- b. *yona* (sentence-final particle) used by female subjects [9, 4]
Kyoo tesuto ga owatte kara, uchi ni kaette, nereba yokatta
 today test NOM finish after home to return if-slept would-be-good

naa. Yojikan wa, yojikan no kyukei wa nagai yonaa.
 SFP 4-hours TOP GEN break TOP long SFP
 ‘Today, I should have gone home after the test and slept a little. Four hours, a four-hour break is too long.’
- (9) a. *kane* (sentence-final particle) used by male subjects [7, 2]
Rinakkusu no ii tokoro wa nan nano kane.
 Linux GEN good place TOP what COP SFP
 ‘I wonder what the advantage of a Linux installation is.’

- b. *kane* (sentence-final particle) used by female subjects [6, 2]
Yoshie wa doo shiteru kane.
 TOP how is-doing SFP
 'I wonder how Yoshie's been doing.'

There are many more expressions traditionally claimed to be “men’s language” (e.g. NP + *da* ‘It is NP’, *daroo na* ‘I guess ...’, Adj + *yone*). However, because they were used with equal frequency by both sexes in my data, I do not categorize them as “men’s language” in this study.

To summarize this section, in soliloquy, only first person pronouns were found to be strictly gender-specific. Vowel coalescence and suppletion tend to be strongly masculine, although women occasionally use them. By contrast, the distribution of *yona* and *kane* are less skewed, although still more common among male speakers. These distributions clearly show that gendered language categorization is by no means clear-cut.

4.3 Indexicality and linguistic ideology

It is now widely agreed that there is no direct indexing between linguistic form and gender. Ochs (1993, 1996) contends that linguistic forms can **directly** index their pragmatic meanings and **indirectly** index certain contextual information. She considers that affective stances and social acts (e.g., speech acts) are direct indices, while gender and social relations between the interlocutors are indirect indices. She analyzes the Japanese sentence-final particles *ze* and *wa* to be directly indexing affective stances of coarse versus delicate intensity, respectively, and these affective stances, in turn, indirectly index gender and gender images of masculinity and femininity.

Subscribing to Ochs’ distinction of direct and indirect indexicality, Okamoto (1997) points out that Ochs’ formulation lacks an explicit mechanism to relate the pragmatic meaning of a linguistic form (direct indices) to social, contextual information (indirect indices). Okamoto acknowledges that women sometimes use “masculine” forms, not because they want to sound stereotypically masculine, but because the directness or assertiveness of such forms indirectly indexes intimacy, not roughness or lack of femininity.

Okamoto further argues that the speaker’s selection of indexical expressions is made **strategically**, not only with consideration of multiple social aspects of the context (e.g., sex, age, intimacy, genre, speech-act type), but also to the speaker’s linguistic ideology. Based on these considerations, speakers employ expressions that they consider most appropriate and effective in each situation.

Regarding gender ideology, Okamoto (1997:808) cautions that contemporary Japanese women's language is "a constructed category based on [...] the idealized speech style of traditional women in the upscale Yamanote area of Tokyo." Consequently, prescribed women's language has come to be regarded as that which "proper" women are expected to use. "It is thus class-based and normative, representing the hegemonic linguistic and gender ideology" (ibid.). Women's speech that does not conform to this ideological norm is subject to criticism: not feminine, unattractive, evidence of ignorance, and symptomatic of improper upbringing.

Dominant ideologies in society certainly influence speakers' strategies of language use, Okamoto continues, but it is also important to distinguish particular beliefs about language use from actual distribution of linguistic forms. She reports that most of the subjects in her study do not use the prescribed gendered language in daily conversation; rather, they normally use what she refers to as a **moderately masculine** speech style (p.799). Actual language use is not always consistent with the dominant ideology because of the complexity of each social context and also because of the diversity of linguistic ideologies that mediate the indexing process.

I agree with Okamoto in that various ideologies and interpretations of a speech situation shape the form of each utterance. However, it is difficult to subscribe to the idea that the selection of forms in soliloquy is **strategically** made, because, in the absence of an addressee, it is hard to imagine what the intended goal of such a strategy is. Without explicit evidence documenting conscious and strategic uses of gendered forms in soliloquy, it is more plausible to interpret the available experimental data in such a way that female speakers, perhaps at a subconscious level, simply do not consider most of the traditionally defined masculine forms to be gender-specific. Rather, they consider such forms to be **default** forms of speech that can be used when there is no social pressure to use something else.

It has also been reported in recent years that gendered speech is not really as clear-cut as had long been assumed, and that there is significant variability among women, according to their age, geographical origin, and speech situations, as claimed in the articles included in Okamoto and Smith (2004). The discovery in the present soliloquy study differs crucially from other works in its nature. It was found that women **invariably** and almost **exclusively** use default (i.e., most of so-called moderately masculine) forms throughout their soliloquies, regardless of age, geographical origins, or the speech styles they normally employ in social conversations.¹⁴ I therefore propose the hypothesis that so-called moderately masculine forms of Japanese are not masculine at all: they are gender-neutral, at least at some level of the speaker's tacit linguistic knowledge.

Another factor to consider is diachronic change. For more than 20 years, I have rarely had occasion to watch/listen to Japanese films, television dramas, and theatrical productions. For this study, I recently examined random examples of

more than 50 of these cultural media produced in that 20-year period. I found that, while the dialogue of male characters does not exhibit significant changes in the interim, that of female characters has changed conspicuously. Most female characters use the default form, and do so much more frequently than their cohorts did two-plus decades ago. It is my conjecture that Japanese women have been soliloquizing in the default form for a long time. Women's speech has not formally changed; rather, women's **application** of the default form has expanded from the private into the public sphere.

4.4 Asymmetry in gendered language

When Ochs' hypothesis is applied to soliloquy, two problems emerge. First, contrary to her contention, there seems to be no flexibility in the choice of first person pronouns; invariably, all male subjects used either *ore* or *boku*, whereas all female subjects used *watashi* or *atashi*. In other words, these pronouns can be considered as direct indices of the speakers' gender identities. In Ochs' analysis, when a woman feels a strong emotion such as anger, she could select *ore*. By contrast, when a man experiences a tender emotion, he would have an option to use *atashi*. But both predictions are unlikely. First person pronouns are strongly tied to gender identity, and, therefore, it is more reasonable to regard them as direct indices.

The second problem with Ochs' model of indexicality is that it cannot account for the asymmetry observed in the soliloquy data. That is, while female subjects occasionally used "men's language," male subjects never used "women's language." Regarding this issue, Nakamura (2001:20) also reports virtually identical traits among young children:

Girls often were willing to play with many of the toys that boys typically play with (e.g., blocks), but it was difficult to get boys to play with toys associated with girls (e.g., tea sets). This tendency increased with age. Boys sometimes were willing to try girls' toys when playing with their mothers but refused to do so when playing with other boys.

Why does this pronounced asymmetry arise if so-called men's and women's languages do not directly index gender or gender images of masculinity and femininity, but, rather, different yet gender-neutral affective stances? There must be some factors that motivate women to use masculine expressions, but discourage men from using feminine expressions. Before undertaking this inquiry, let us note that there are two different approaches to the study of gendered linguistic behavior.

The two commonly recognized approaches utilize either the **dominance** framework or the **difference** framework (Cameron 1998:215–221). The dominance framework claims that male dominance in society is reflected in, as well as the major cause of, gendered language (e.g., Lakoff 1975, Fishman 1983, West and

Zimmerman 1983, 1987). Because of women's lower status and the social pressure on them to "speak like a lady," women tend to use more hedges, qualifiers, polite forms, etc. for covering up their assertiveness and conveying their insecurities as well as to trivialize their talk and accountability (Lakoff 1975).

The difference framework (e.g., Maltz and Borker 1982, Tannen 1986, 1993) focuses more on linguistic "miscommunication" between the sexes and concludes that dominance and power do not play significant roles in such "miscommunication." This approach perceives men and women as belonging to different subcultures and having different-but-equally-valid rules of conversation acquired from same-sex social interactions throughout their adolescent years. Therefore, even when both men and women attempt to treat each other as equals, (sub)cultural miscommunication can occur.

Uchida (1992: 558), however, strongly questions the validity of the anti-power-based difference framework, contending that in reality the difference is male dominance, and emphasizing that male dominance exists regardless of what the individual intends. She argues that while the difference approach appeals to our desire to believe in the equality of men and women, social equality in principle and in reality are two very different matters wherein the former does not guarantee the latter.

We can see a parallel between the difference framework and Ochs' two-tiered indexing approach to gendered language. Neither can account for the asymmetry in linguistic behavior of males and females. In soliloquy, where social pressure is minimalized, female speakers use masculine forms to express whatever attributes such forms bear, whereas male speakers **never** use feminine forms. In this regard, Uchida (1992: 560) writes:

The observation of power structure can also be made when we look at the speech patterns acquired by girls and boys through same-sex interactions with peers. Girls' principles of cooperation, collaboration, equality, sharing and relating and showing empathy perfectly coincide with the 'typical' female characteristics: nurturing, supportive, expressive, emotive, friendly, relationship-oriented, and other similar adjectives, which are also associated with 'weakness' and 'powerlessness.' Boys' patterns [...] involve competing for and holding on to the floor, asserting, challenging, arguing, showing one's dominance and verbal aggressiveness, which are associated with 'powerful' and 'masculine' traits.

To maintain Ochs's theory, we need to postulate that certain expressions directly index tough intensity and power, while some other expressions directly index delicate intensity and powerlessness. The combination of tough intensity and power may be reasonable, but the combination of delicate intensity and powerlessness comes across as arbitrary, unless we accept the idea that the existence of **femininity** relates them. I, therefore, argue that so-called gendered language in Japanese is

in fact gendered to a significant extent, certainly more so than many recent studies in the field claim.

This preliminary study of Japanese gendered language guarantees that investigation of soliloquy is momentous in the area of presentation of self (à la Goffman 1959). That the present data-collection method does not enable the researcher to efface completely him/herself is undeniable; thus, participants were self-conscious and naturally wanted to project their preferred self-image. Nevertheless, they are likely to perceive less social pressure than when speaking publicly and to reveal themselves in a less inhibited manner.¹⁵

5. The sentence-final particles *ne* and *yo*

Ne and *yo* are almost always described as expressions occurring exclusively in the presence of an addressee, a person distinct from the speaker him/herself, as summarized in Saigo (2006). Contrary to this widely held belief, *ne* frequently appears in soliloquy, although *yo* is extremely rare. This fact has not yet become widely known. In this section I examine *ne* and *yo* as they occur in the present data and demonstrate how soliloquy can shed new light on well-studied phenomena.

5.1 Previous studies of *ne* and *yo*

Commonly, *ne* is said to be used when the speaker assumes that s/he shares with the addressee the same status regarding knowledge of, or belief about, the piece of information being conveyed, whereas *yo* is used when different cognitive statuses are assumed. Uyeno (1971:96), for example, points out that *ne* in (10) is selected when the speaker expects the addressee, like him/herself, to be aware of the information, whereas *yo* is selected when the speaker expects the addressee to be unaware of it.

- (10) *Sonna koto wa atarimae da ne/yo.*
 such thing TOP matter-of-course COP SFP
 ‘That goes without saying.’

The functions of *ne* include requesting confirmation and seeking or showing agreement, as exemplified in (11–12), taken from Ohso (1986:91):

- (11) A: [Requesting confirmation]
Kyoo wa kinyoobi desu ne.
 today TOP Friday COP SFP
 ‘Today is Friday, isn’t it?’

B: *Ee, soo desu.*
 yes so COP
 'Yes, that's right.'

(12) A: [Seeking agreement]
Kyoo wa kinyoobi desu ne.
 today TOP Friday COP SFP
 'Today is Friday, isn't it?'

B: [Showing agreement]
Soo desu ne. Yatto isshuukan owarimashita ne.
 so COP SFP finally a-week ended SFP
 'Yes. Finally, the week is over.'

However, as Kato (2001:33–34) points out, this analysis cannot allow for the use of *ne* in (13) nor for the use of *yo* in (14).

(13) A: *Juubun ja nai desu ka.*
 enough not COP Q
 'It's enough, isn't it?'

B: *Watashi to shite wa, mitomeraremasen ne.*
 for-me TOP cannot-agree SFP
 'I can't agree with you.'

(14) [The interlocutors are seeing the rain together.]
Yoku furu ne/yo.
 often fall SFP
 'It's raining again.'

Kamio (1994) also characterizes *ne* and *yo* while presupposing the presence of an addressee: *ne* appears when the information falls within the addressee's territory (15a), but *yo* occurs when it falls within the speaker's territory (15b).¹⁶

(15) a. *Kimi no imooto-san, uta ga umai ne.*
 you GEN sister song NOM is-good-at SFP
 'Your sister sings well.'

b. [The speaker is a resident in Kushiro.]
Kushiro wa samui yo.
 TOP cold SFP
 'It's cold in Kushiro.'

Kamio distinguishes between obligatory *ne* and optional *ne*. *Ne* is obligatory when the speaker assumes that information falls completely into the addressee's territory and only partially into his/her own territory, as for example in (15a), or when the speaker assumes that information falls completely into both the speaker's

and the addressee's territories, as in (16), when both interlocutors are under a clear blue sky.

- (16) *Li tenki da nee.*
 good weather COP SFP
 'It's a beautiful day!'

On the other hand, *ne* is optional when a given piece of information does not fall into the addressee's territory, but it is (i) closer to the speaker, as in (17a), or (ii) equally distant from both, as in (17b). The function of optional *ne* cannot be to seek assent or confirmation from the addressee because the addressee does not have the information in his/her territory. Rather, it indexes politeness and/or a cooperative attitude.

- (17) a. *Chotto yuubinkyoku e itte kimasu ne.*
 a-little post-office to go SFP
 'I'm just going to make a quick trip to the post office.'
 b. *Ashita wa hareru deshoo nee.*
 tomorrow TOP fine will SFP
 'It'll be nice weather tomorrow.'

Cook (1990, 1992) argues that *ne* is not limited to agreement on propositional content, and that it frequently signals an **affective common ground** between the speaker and the addressee, requiring the addressee's cooperation. As such, *ne* is often used when the speaker must convey negative, unwelcome information, as shown in (18):

- (18) *Oshokuji no toki ni mama shikaritaku nai kedo nee. Hitoshi no*
 meal GEN time mother not-want-to-scold but SFP GEN

sono tabekata ni wa moo mama yurusenai.
 that way-of-eating TOP no-more cannot-forgive

 'I don't want to scold you at dinner time but ... I can't tolerate the way in which you eat anymore.' (Translation is Cook's.)

Katagiri (1995, 2007) contends that *ne* and *yo* contribute to **the coordination of dialogue** by indicating the speaker's state of acceptance/non-acceptance regarding the information expressed by the utterance. *Yo* is used to present the information as already accepted by the speaker, whereas *ne* indicates that the information has not yet been thoroughly accepted. The addressee can subsequently use such information to determine for him/herself whether or not to accept. Katagiri writes:

Dialogues can be considered as communication through an unreliable channel. What a speaker says may not be heard by a hearer. Even if it is heard, it may not be

understood. And even if it is understood, it still may not be accepted. In order to ensure that the dialogue proceeds successfully, dialogue participants have to collaborate with each other to assist and assure the establishment of mutual beliefs, and to secure common grounds, between them. (2007:1316)

5.2 *Ne* in soliloquy

Surprising in the present soliloquy data is the frequency of *ne*. It occurs by itself 317 times, and when combined with *kane*, *kene*, and *yone*, its occurrence rises to 458 times, or 15.1% of 3,042 utterances. This high frequency suggests that it is inadequate to characterize the essential function of *ne* as (a speaker's assumption of) shared knowledge with the addressee, the interlocutors' information territories, an affective common ground between them, or the coordination of dialogue.

The only previously proposed analysis that can be extended to accommodate *ne* in soliloquy is Takubo and Kinsui's **Discourse Management Model** (Takubo and Kinsui 1997, Kinsui and Takubo 1998). Although considering *ne* to be an interactional device (i.e., assuming the presence of an addressee), they nevertheless attempt to explain its function without recourse to the addressee's (assumed) knowledge about given information. To this end, they posit a cognitive interface between speech forms and the speaker's knowledge stored in his/her memory, conceived as a database. This interface is analogous to a buffer in a computer, i.e., special memory used temporarily to store input or output data, and is divided into two psychological domains: the **direct experience domain (D-domain)** and the **indirect experience domain (I-domain)**.

At the beginning of each discourse, information about the discourse situation (part of direct experience) and general information that the speaker considers relevant to the coming discourse stored in his/her permanent memory are highlighted, and indices of, or pointers to, such data are temporarily stored in the D-domain. At the same time, a unique I-domain is constructed specifically for the purpose of each discourse. In order to speak, Takubo and Kinsui argue, the speaker interprets information in the D-domain into conceptual (linguistic) terms and stores it in the I-domain. (It is the indices that are stored in these domains, but for the sake of exposition, the idea is simplified and stated as if information itself is stored in them.)

In their model, the act of speaking involves manipulation of indices in the D-domain and I-domain by means of registering, searching, computing, inferring, etc., and sentence-final particles are markers for operations being carried out on the database. They argue that the essential function of *ne* is the **matching of information** between two sources, "as a marker when the speaker is in the process of incorporating assumptions from the I-domain into the D-domain. It is a marker for

an on-going verification procedure” (Takubo and Kinsui 1997: 754). For example, when the speaker tries to confirm that the addressee is John Smith, this proposition is in the speaker’s I-domain because it is yet to be verified. If there is enough evidence, the speaker concludes that the proposition is true, and at that point may incorporate it into the D-domain.

- (19) *Anata wa Jon Sumisu-san desu ne.*
 you TOP COP SFP
 ‘You are Mr. John Smith, aren’t you?’

- (19’) D-domain: evidence for the identity of the hearer in the speaker’s memory
 I-domain: the proposition to be verified = the addressee is John Smith

Ne signals that the speaker is in the process of such verification, or self-confirmation. In conversation (20), Speaker B first looks at his watch and finds that the little hand is pointing to “7,” and then he judges that the watch is accurate so that what it tells is the correct time (Takubo and Kinsui 1997: 752).

- (20) A: *Nan-ji desu ka.*
 what-time COP Q
 ‘What time is it?’
 B: [Looking at his watch]
Eeto, shichi-ji desu ne.
 well 7-o’clock COP SFP
 ‘It’s seven o’clock.’

This explanation captures well the different nuances between the utterances with and without *ne*. Without *ne*, B’s utterance would merely indicate that the time is seven o’clock, not implying any type of computation or confirmation on the part of B. If matching between two sources is unlikely involved, the use of *ne* will sound anomalous, as in (21):

- (21) # *Watashi no namae wa Tanaka desu ne.*
 I GEN name TOP COP SFP
 ‘My name is Tanaka.’

Based on the present soliloquy experiment, I have concluded that Takubo and Kinsui’s hypothesis is quite plausible. Monitoring one’s own thoughts without verbalizing them is virtually impossible, because in our consciousness, thoughts (frequently as mental imagery, i.e., quasi-perceptual experiences) appear and disappear rather quickly. Subvocalizing them as inner speech helps one think coherently, but this help is inadequate when the thought becomes complex. In such a case, the act of soliloquy improves the thought process dramatically. Consider, for example, counting things in a noisy, distracting environment. One naturally

counts aloud in such a case. And, of course, writing (i.e., fixing, or setting down, thoughts) is better yet as a means to organize one's thinking. The act of soliloquizing slows thinking, as though anchoring transient thoughts/images to the cognitive ground with words. Such anchored thoughts can then, as Takubo and Kinsui conjecture, undergo various manipulative processes. Without such manipulation, coherent discourse is deemed impossible.

Monitoring his own soliloquy, one of my experiment subjects spoke the following passage, which illustrates the transient nature of thoughts:

- (22) *Hitorigoto-tte, tashikani muchakucha da ne. Jibun ga miteru. Utsumuite kangaeteru. Muchakucha da. Taishite hitorigoto to kawaranai kamo na, futsuuni itteru koto mo. Hontoni muchakucha kamo shinnai ne. Un, muchakucha da. Aa, sake ga nomitai. Setsumeeteki ni naru to, donna daroo. Eeto, unto, denwa no yoko ni oitearu tsubo mitai no wa, hijooni tokkuri ni niteite. Tokkuri? Un, nantetta-kke. Kekko wasureru mon da ne. Eego ga, eego ga zenzen damena warini, Nihongo ga dete konai. Eeto, nan da-kke. Eeto, aa, dame da. Omoidasenai. Tonikaku, Nihonshu ga nomitai kamo shirenai.*
 'Self-talk is certainly a scramble. I'm watching myself. Looking down and thinking. A big jumble. But it may not be different from my normal speech. My normal speech may be jumbled as well. Yeah, jumbled. Well, I want to drink *sake*. How will it be if I explain something? Well, hmm, the pot or something next to the telephone looks like *tokkuri* [a *sake* bottle] ... *Tokkuri?* Well, what do you call it? I've forgotten a lot indeed. Poor in English, and losing Japanese. Well, what was it? Hmm, no, I can't. I can't remember it. Well, I might want some Japanese *sake*.'

The idea of matching seems to apply to most occurrences of *ne* in my soliloquy data. As shown in (23), *ne* occurs frequently with (a) such adverbials as *yappa/yappari* 'as expected, of course', *sasuga* 'as might be expected', *igai to* 'contrary to expectation', *soo ieba* 'speaking of that', *naruhodo* 'reasonably, that explains why something is in such a state', *jissai* 'actually', (b) the experiential demonstrative *are* 'that', (c) a conditional clause, and (d) other kinds of comparison, such as *mukashi no* 'old one'. These expressions indicate that the speaker has compared the current situation with a piece of information in his/her permanent memory.

- (23) a. *Demo, yappa, zasshi-tte Nihon no zasshi no hoo ga*
 but as-expected magazine-QUOT Japan GEN magazine GEN side NOM
ii nee.
 good SFP

'But yeah, with magazines, Japanese ones are better.'

5.3 *Yo* in soliloquy

By striking contrast, the data includes only four occurrences of *yo* by itself and once in the complex form of *kayo*. For example, during one subject's recording, his cell phone rang. After hanging up, he said:

- (25) *Machigai denwa kayo. Kimu-tte dare da yo.*
 wrong telephone SFP QUOT who COP SFP
 'Wrong number? Who's Kim?'

In Maynard's (1997: 88) 60-minute conversation data, *ne* and *yo* occurred 364 and 128 times, respectively, at an approximate ratio of 3:1. The extremely biased distributions between dialogue and soliloquy may shed some light on the nature of these two particles.

Takubo and Kinsui define the function of *yo* as a marker for setting up a proposition in the I-domain **for further inference**. Normally, this process involves copying to the I-domain a piece of information from the D-domain that is already verified. In conversation, stating verified information typically counts as informing the addressee.

- (26) *Ame ga futteiru yo.*
 rain NOM is-falling SFP
 'It's raining.'

Takubo and Kinsui explain that utterance (26) does not simply inform the addressee, but it necessarily triggers the addressee's inferences, e.g., taking an umbrella or canceling the planned picnic. Unlike the case of *ne*, however, it is unclear how their explanation can apply to the usage of *yo* in soliloquy because of the lack of examples in their study that do not involve an addressee.

On the other hand, Inoue's (1997) explanation of *yo* is more comprehensible and applicable to soliloquy. He distinguishes *yo*↑ (with a rising intonation) and *yo*↓ (with a level or a falling intonation). He contends that *yo*↓ forces both the speaker and the addressee to re-evaluate the conversational and other relevant contexts in such a way that the conveyed proposition must be recognized as true. He illustrates this idea with the following examples:

- (27) *Ano hito, mada anna koto itteru yo*↓. (*Komatta mon da.*)
 that person still such-a-thing is-saying SFP troublesome thing COP
 'That guy is still saying such things. (Message expected to be conveyed: It's troublesome.)'

According to Inoue, the implicit message is derived from the speaker's reconfirmation and reassessment of the relevance of each proposition in a particular speech situation.

Regarding $yo\uparrow$, Inoue explains that not only does it force the interlocutors to reconfirm the situation with the proposition deemed to be true, but it also obligates the addressee to consider accordingly his/her **future act**.

- (28) A: *Inoue-san kara no faksu todoitemasu ka?*
 from GEN fax has-arrived Q
 ‘Has a fax from Inoue come yet?’
 B: *Todoitemasu yo\uparrow. (Doo saremasu ka?)*
 has-arrived SFP how will-do Q
 ‘Yes, it has. (Message expected to be conveyed: What are you going to do with it?)’

Only $yo\downarrow$ can occur in soliloquy, and it supports Inoue's analysis, wherein $yo\downarrow$ does not need to involve an addressee, but $yo\uparrow$ necessarily does.

5.4 The skewed distribution of *ne* and *yo*

Let us now consider why *ne* occurs so frequently in soliloquy, and *yo* so rarely. If we postulate that the primary function of *ne* is matching pieces of information and that of *yo* is a preparation, or trigger, for inference, this highly skewed distribution becomes intelligible.

Human life involves constant learning, i.e., the acquisition of various kinds and pieces of knowledge from one's surroundings. To account for how humans manage such a stream of incoming information, Atkinson and Shiffrin (1968) proposed a highly influential model of memory. In their model, the first component is called a **sensory register**, which stores incoming sensory signals but holds them for less than a second. The second component is referred to as a **short-term store** (also known as **primary memory**, **working memory**, or **attention**), holding information in one's awareness, which will be lost in approximately 30 seconds if it is not rehearsed (repeated) or reactivated. The third component, called **long-term store**, has an unlimited capacity; information stored there can last a lifetime.

This type of memory model hypothesizes that when a new piece of information is acquired, it is temporarily stored in working memory.¹⁸ Some of the information stored there is then encoded in long-term memory. Later, when the stored information is recalled/retrieved in working memory in a new context, it merges with a new piece of information and modifies itself.

There is abundant evidence supporting the idea that at some stage during information processing, retention, or retrieving, people check on the consistency

between the newly acquired information and the relevant knowledge pre-existing in their long-term memory. For example, Bartlett (1932) asked his subjects to reproduce an unfamiliar North American folk tale which included words and ideas that would not appear in conventional Western folk stories. After 20 hours, the subjects were asked to recall as much of the story as possible. The results demonstrated that some parts of the story were subtracted, others were over-elaborated, and some pieces of information were even added in order to make the story fit the subjects' pre-existing awareness of the world. That is, either when the story was stored in long-term memory or when the stored story was retrieved, the subjects performed consistency checking by matching it with other familiar stories pre-existing in their long-term memory. Therefore, if *ne* is associated with checking/matching, its frequent occurrences in soliloquy should not be surprising.

On the other hand, triggering an inference — the postulated function of *yo* in the present study — is a far more complicated phenomenon: it creates new pieces of information from existing ones.

All instances of inference are likely to involve the matching of information. This hypothesis is illustrated by Loftus and Palmer's (1974) experiment in which college students viewed seven short films depicting two-car accidents. They were then asked to estimate the speed at which the vehicles were traveling when they hit each other. The question was in the form of "About how fast were the cars going when they ____ each other?" The blank was filled variously for each subject with *smashed into*, *collided with*, *hit*, *bumped*, or *contacted*. The questions with *smashed* received the highest speed-estimates, whereas *contacted* received the lowest. Here, the subjects made an inference. They invariably matched their knowledge of accidents evoked by the question's verb with their recollection of the accidents they had seen in the films.

Matching two pieces of information is an indispensable part of inference, but inference is not required in matching. This seems to explain why *ne* appears abundantly in soliloquy, but *yo* does not. The present study of *ne* and *yo* thus demonstrates that soliloquy provides a new kind of data that can enable us to delve further into even well-studied topics.

6. Demonstratives

This section analyzes the *ko-so-a* demonstratives in Japanese as they occur in the soliloquy data. Because these demonstratives have customarily been characterized according to the regions and relative positions of entities in the physical space of speaker and addressee, an examination of how they behave when no addressee is present is of particular interest.

6.1 Deictic use of demonstratives

Conventional Japanese grammars describe Japanese demonstratives as encoding a three-way distinction, referred to as the *ko-* (proximal), *so-* (medial), and *a-* (distal) series. Deictically, when the speaker and addressee are physically facing in the same direction, the *ko-* series — e.g., *kore* (pronominal), *kono* (adnominal) ‘this’ — is used for entities located close to them; the *so-* series — e.g., *sore* (pronominal), *sono* (adnominal) ‘that’ — is used for those at some distance from them; and the *a-* series — e.g., *are* (pronominal), *ano* (adnominal) ‘that which is way over there’ — for those even farther away. This characterization of *ko-so-a* is referred to as the **Distance Model**.

On the other hand, when the speaker and the addressee are facing each other, the *ko-* series is used to refer to entities near the speaker; the *so-* series is used for entities near the addressee; and the *a-* series for those at a distance from both of them. This analysis is called the **Territory Model**.

6.2 Anaphoric use of demonstratives

Kuno (1973:282–290) makes the generalization that *ko-* is used only deictically, but that *so-* and *a-* can be used either deictically or anaphorically. For deictic usage, Kuno subscribes to the Territory Model. For anaphoric usage, he considers that *so-* is selected either (i) when the speaker does not know the referent well (i.e., the speaker has only **indirect** knowledge) or (ii) when the speaker does know the referent well (i.e., has **direct** knowledge) but nevertheless assumes that the addressee does not, as in (29a). By contrast, *a-* is selected when the speaker believes that both s/he and the addressee know the referent well or have shared experience with the referent, as in (29b).

- (29) a. *Kinoo Yamada-san to iu hito ni aimashita. Sono (#Ano)*
 yesterday as-named person DAT met that
hito, michi ni mayotte komatte ita node, tasukete agemashita.
 person way DAT lost was-in-trouble because helping gave
 ‘Yesterday, I met a man named Yamada. Because he [**that** person] was having difficulty finding his way, I helped him.’
- b. *Kinoo Yamada-san ni aimashita. Ano (#Sono) hito itsumo genki desu ne.*
 always healthy COP SFP
 ‘Yesterday, I met Mr. Yamada. He [**that** person] is always in great spirits.’

The phrase *to iu hito* ‘a person named’ in (29a) signals that the speaker believes that the addressee does not know Yamada. In such a case, the use of *sono* is appropriate, but *ano* is not. In (29b), on the other hand, the absence of *to iu hito* indicates

that the speaker assumes that the addressee has direct knowledge of Yamada. In this case, *ano* is appropriate, but *sono* is anomalous.

Kuroda (1979/1992) examined the use of *ko-so-a* in (constructed) soliloquy and found cases that counter-exemplify Kuno's generalizations. He questions (i) whether the deictic and anaphoric uses are fundamentally distinct, and (ii) whether language use should always be accounted for in terms of communication, in which the presence of an addressee is always presumed. If we subscribe to a communicative explanation, Kuroda cautions, we need to be aware that some characteristics of language use are likely derived from the communicative setting itself, rather than from the properties of the expressions under consideration.

In his endeavor to define soliloquy, Kuroda acknowledges that it is possible for a second person pronoun, e.g., *omae* 'you', to occur within it, as in (30a). However, he considers this to be a pseudo-conversation, not a genuine soliloquy. By contrast, he argues that doubt is a prototypical activity of inner thought. When one says (30b), one does not presume the presence of a second person who might provide an answer.

- (30) a. *Omae wa nanto bakana koto o shitan da.*
 you TOP how stupid thing ACC did
 'What a stupid thing you [the speaker] did!'
- b. *Jibun wa hatashite sonzai shite iru no daroo ka.*
 self TOP really exist NMLZ I-wonder
 'I wonder whether I really exist.'

In order to examine the use of demonstratives in soliloquy, Kuroda eliminates the addressee from Kuno's analysis. Thus, when used anaphorically, *a-* should be used when the speaker knows the referent well, and *so-* when s/he does not. Regarding the deictic usage, the elimination of the addressee predicts that *ko-* should be used for a nearby entity, and *a-* for a distant entity, with *so-* absent. Kuroda, however, suggests that *so-* can also be used deictically in soliloquy. Let us suppose that someone has been informed that he has a stomach ulcer. He wonders and says (31a). On the other hand, one morning he feels an unusual sensation in his stomach and says (31b).

- (31) a. *Sore wa donna iro o shite iru no daroo ka.*
 that TOP what color ACC is NMLZ I-wonder
 'I wonder what color **that** is.'
- b. *Ittai kore wa itsu made tsuzuku no daroo.*
 what-on-earth this TOP when until continue NMLZ I-wonder
 'I wonder how long **this** will last.'

Utterance (31a) is based on hearsay information, while (31b) is based on the speaker's direct experience. Kuroda declares that deictic and anaphoric usages of

so- and *a-* are both determined by the speaker's familiarity with the referent. He re-labels Kuno's direct knowledge as **experiential knowledge**, and Kuno's indirect knowledge as **conceptual knowledge**, i.e., via hearsay or inference. Kuroda argues that *a-* is used if one's knowledge about the referent is experiential, whereas *so-* is used when it is conceptual. He presents the following counterexample to Kuno's analysis:

- (32) *Boku wa Oosaka de Yamada Taroo to iu sensei ni osowattan da kedo,*
 I TOP in called teacher DAT learned-from but
kimi mo ano sensei ni tsuku to ii yo.
 you too that teacher DAT study-under if good SFP
 'I studied in Osaka with a professor named Taro Yamada. You should study with him [that professor], too.'

Like (29a), the use of *to iu sensei* 'professor named' in (32) indicates that the speaker assumes the addressee's lack of knowledge of the professor; therefore, according to Kuno, *sono*, but not *ano*, must be used. However, *ano* in (32) is perfectly natural, and it conveys that the speaker knows Professor Yamada personally and well.

6.3 *Ko-so-a* in the soliloquy data

6.3.1 *Ko-* series

Equipped with the background information provided in Section 6.2, we now examine the soliloquy data, which contain 428 *ko*-tokens, 151 *so*-tokens, and 237 *a*-tokens. Of 428 *ko*-tokens, all but two were clearly deictic, e.g., (33).

- (33) [Looking at the desk chair in the office]
A, kono isu choo-raku soo.
 oh this chair super-comfortable look-like
 'Oh, **this** chair looks super-comfortable.'

The problematic cases include (34), where the speaker had been shopping for an ottoman (chair) and was browsing a catalog while recording her speech.

- (34) *Maa, aarudeko no ii no ga attara, hoshii kedo, maa, kore wa*
 well Art Deco GEN good one NOM if-exist want but well this TOP
kinagani yaroo.
 without-haste will-do

'Well, if there's a good one in the Art Deco style, I want it, but I think I'll take more time with **this** [purchase].'

Kore in this utterance refers to the abstract concept of shopping, which is not visibly present in the speech situation. Therefore, it is not a definite case of deixis. Kuno contends that when *ko-* appears to be anaphoric, it is actually “indicating something as if it were visible to both the speaker and the hearer at the time of the conversation, and thus it imparts vividness to the conversation” (1973:288). This explanation applies to (34).

Interestingly, all of *ko-so-a* can appear in this sentence, and they would convey different situations. *Kore* refers to “the activity I’m engaged in **now**,” viz. buying a chair. Because the concept *now* is involved, it is categorized as deictic. If *sore* were to be employed, it would indicate that the speaker was thinking about the activity of shopping, and that, unlike (34), she was not physically engaged in it at the time of utterance. This *sore* should be considered anaphoric. If *are* were to be used, the speaker would be remembering various shopping trips she had made to furniture stores in the past, and the utterance would indicate that she will continue making such shopping trips. Rather than anaphoric, this use of *a-* sounds deictic. We will return to this issue later.

6.3.2 *So-series*

Regarding the *so-series*, all of the 151 tokens are clearly anaphoric. Although Kuroda’s stomach ulcer episode illustrating the possibility of deictic *so-*, as in (31a), is logically possible, such usage seems to be extremely rare. This absence of deictic *so-* suggests that the Distance Model (proximal *ko-*, medial *so-*, distal *a-*) does not operate in soliloquy. All of my recording was conducted in a small room, and yet subjects used *a-* to refer to entities located only a few feet away, as in (35).

- (35) *Ano kakejiku wa dare ga kaita no kanaa.*
 that scroll TOP who NOM wrote NMLZ SFP
 ‘I wonder who did **that** scroll.’

Several subjects mentioned the scroll that was hanging on the wall a few feet from where they were seated. Some used *ko-* to refer to it, while others used *a-*. These data support the Territory Model; i.e., *so-* refers to an addressee’s territory but, because no addressee is involved, *so-* is immaterial.

The anaphoric use of *so-* is considered next. Subtracting the addressee from Kuno’s analysis, we assume that *so-* is used when the speaker does not know the referent well, and that *a-* is used when s/he knows it/him/her well. Or, in terms of Kuroda’s characterization, *so-* is used when the speaker knows of the referent merely conceptually, and *a-* when the knowledge is experiential. Among anaphoric *so-* utterances, some appear to support Kuno’s and Kuroda’s analyses, as in (36), but the majority of them do not, as in (37).

- (36) *Sankanbi ja nakute, bunkasai ja nakute, aa, namae wasureta. Eeto,*
 observation-day is-not open-house is-not name forgot well
oyako, oyako nantoka. Ee, nande sonna kotoba wasurerun yaro.
 parent-child something why that word forget I-wonder
6-nenkan mainen atta noni.
 6-years every-year existed though

‘Not a [parents’] observation day, not an open house, oh, I forgot what we called it [a school event]. Hmm, parent-child, parent-child something. How could I forget such a [that kind of] word? We had one every year for 6 years ...’

- (37) *Soo da, pasokon ga kowarechatta kara, sono shuuri mo,*
 well personal-computer NOM has-broken-down because that repair also
moshi dekitara, shitai shi.
 if possible want-to-do and

‘Oh, yeah, my computer has broken down, so, if possible, I want to fix it [that] too.’

In (36), we can easily infer that the speaker does not know the referents well. However, in (37) *sono* refers to the speaker’s own computer. The abundance of examples like (37) suggests that, contrary to Kuno and Kuroda, *so-* can be used anaphorically to refer to entities regardless of the speaker’s familiarity with them.

6.3.3 *a-series*

The *a-series* occurred 237 times. As shown in (38), *a-* can accompany an antecedent (underlined), and can therefore be considered anaphoric:

- (38) [Wondering which car her in-laws would buy]
Okaasan rekusasu ki ni itteru yoo datta kedo, demo are wa okkii
 mother Lexus like it-seemed but but that TOP big
kuruma da shi nee.
 car COP and SFP

‘Mother seemed to like the Lexus, but it’s a big car.’

However, *a-* also occurs frequently without any antecedent:

- (39) a. *Aaa, kyoo mo hare. ashita mo hare, ashita mo hare*
 today also fine tomorrow also fine tomorrow also fine

hen kana. Ashita haretara, ano sandaru hako.
 not SFP tomorrow if-fine that sandals will-wear

‘Well, it’s a beautiful day today. Tomorrow, I hope the weather will be fine again tomorrow. If it’s fine, I’ll wear **those** sandals.’

- b. [Looking at a magazine]

Kore, are da. Zenmai da.
 this that COP flowering-fern COP
 ‘This is **that**. A flowering fern.’

A- in (39) seems to be deictic, although the referents are not visibly present in the speech situation. While the speakers soliloquized, a certain entity apparently emerged in their consciousness, and they referred to it deictically with *a-*. It is not likely that these emerging entities in the speakers’ minds were linguistic; more likely, they were mental imagery, i.e., a quasi-perceptual experience. In (39a), the speaker was referring to her mind’s images of sandals. In (39b), the speaker was looking at the cooking section of a magazine. This utterance is of the equational “X is Y” type, wherein “X” is identified visually referring to a picture in the magazine by the deictic *kore*, and “Y” non-visually by the deictic *are*. Then, the speaker remembered the name of the entity, *zenmai* ‘flowering fern’, and identified it as such.

A question arises as to whether (38) and (39) are distinct, (38) being anaphoric and (39) being deictic. Considering the speakers’ minds, both seem to function in the same way, regardless of the entities being introduced linguistically prior to the use of *a-*. Because sorting the occurrences of *a-* in soliloquy into deictic and anaphoric according to the presence or absence of an antecedent is cognitively and to a significant extent arbitrary, I analyze both of them straightforwardly as deictic. I also conjecture that, even in conversation, *a-* is always deictic, pointing to a speaker’s mental construct.

Mikami (1970/1992) speculated on this possibility, arguing that *a-* is always deictic, referring to an entity at a distance commonly perceived by both the speaker and addressee in either space or time. Arguing counter to Mikami, Kuno (1973/1992:73) emphasizes that Mikami’s account cannot predict such differences as were illustrated in (29a, b). Furthermore, Kuno questions how we are able to determine whether something is at a commonly perceived distance. If two people were born in 1960, Kuno continues, can we refer to that year as *ano toshi* ‘that year’? His response is “no, we cannot.”

I contend, with Kuroda, that the variant effects of *a-* and *so-*, such as in (29a, b), can only be accounted for in terms of the act of communication. In this regard, Kinsui and Takubo (1992) consider that the anomaly of *ano* in (29a) is due not to the speaker’s assumption of the addressee’s lack of knowledge of Yamada, but, rather, to its *asocial* nature. Kinsui and Takubo contend that the *ano* in (29a) is anaphoric

(with which I do not agree), indicating that the speaker's knowledge of the referent is experiential. If the addressee is unlikely to know the referent, they continue, to suggest one's knowledge is experiential is not only useless, but alienating as well.

This line of explanation can be extended to include the idea that *ano* in (29a) points to a mental construct. Therefore, unless the addressee has the same construct in mind, its use is communicatively ill-suited. Bringing the same entity into the addressee's consciousness can be accomplished by a prior mention (an antecedent), pointing to its presence in the speech situation, or some other means. However, the selection of *a-* is not directly controlled by such means.

7. Concluding remarks

Following a brief introduction to the study of private speech in relation to soliloquy, this article has analyzed experimentally obtained soliloquy data in Japanese and discussed three topics: gendered language, the sentence-final particles *ne* and *yo*, and demonstratives.

It has widely been argued that no direct indexicality exists between linguistic expressions and the speaker's gender. Rather, what is **directly** indexed is such affective stances as coarse and delicate intensity, which in turn **indirectly** index gender and gender images of masculinity and femininity, respectively. Therefore, women can and do use masculine forms to emphasize coarse intensity, assertiveness, strong determination, etc. — not to express the male gender *per se*. Furthermore, Japanese women's language must be recognized as an ideologically prescribed form, not accurately reflecting the reality of how contemporary Japanese women speak. Consequently, it is not used uniformly by all women on all occasions. Speakers select the most appropriate form based on their consideration of social aspects of the speech context (e.g. sex, age, intimacy, genre, speech-act type) as well as on their linguistic ideology.

Our soliloquy data revealed a somewhat different reality. All of the 16 female subjects **uniformly** used so-called moderately masculine forms as a norm, with the occasional application of moderately feminine forms, or, rarely, strongly feminine or masculine forms. Therefore, this study has determined the “moderately masculine form” to be a gender-neutral, default speech style in non-communicative settings in Japanese. This style is employed when Japanese women are freed from reflecting on the relative status of the interlocutor(s), the formality of the topic and the speech situation, or whatever is considered relevant to the accomplishment of their communicative goals.

Male speakers of Japanese also soliloquize in moderately masculine forms with occasional use of strongly masculine forms. However, the distribution of feminine

and masculine forms across the two sex groups is asymmetrical. While the female subjects used masculine forms, the male subjects used no feminine forms whatsoever. If the direct indices of gendered language are in fact solely affective stances, both sexes should be willing to use it when they wish to express a corresponding affective stance. But this is not the case, and feminine forms must therefore be associated with some attribute that prevents male speakers from using them.

Based on this finding, I have hypothesized that, contrary to the recent trend, Japanese feminine forms directly index female gender, whose characteristics include low rank in the social hierarchy. Typical female characteristics — nurturing, supportive, expressive, emotive, friendly, relationship-oriented — tend also to be associated with weakness, powerlessness, and supposed inferiority.

The proposed direct indexicality hypothesis is endorsed by the fact that no cross-gender variability was observed in the selection of self-referencing expressions: All but one male subject used the male pronoun *ore* (the exceptional one used *boku*), while female subjects used the female pronouns *watashi* or *atashi*. Self-referencing expressions are firmly anchored in one's gender identity, and are therefore direct indices of that identity. When a male uses *watashi* or *atashi* in casual speech, this practice is not interpreted as an indication of gentleness, but, rather, an indication that he is feminizing himself. The same applies when females use *ore* or *boku*. The direct indexicality hypothesis is able to account for the distribution of gendered language among male and female speakers of Japanese.

The original question from which this research project grew was: What will language look like when all interactional elements are removed? What if a certain expression whose functions have been explained mainly, or even exclusively, in terms of interpersonal communication also occurs in soliloquy? The utility of such an expression in soliloquy does not necessarily nullify all proposed interpersonal accounts. However, such a fact does reveal that those interpersonal accounts are inadequate in terms of characterizing the entire range of usage of the expression under investigation.

This is indeed the case with the Japanese sentence-final particles *ne* and *yo*. Most previous analyses were founded on whether or not the information in question was shared by the interlocutors. *Ne*, in particular, has been said to indicate shared knowledge, the interlocutors' information territories, an affective common ground between the interlocutors, and/or the speaker's signaling help for the addressee as to how to process the conveyed information. However, as we have witnessed, *ne* occurred frequently in soliloquy: in approximately 15% of all of the experiment's utterances. In striking contrast, the occurrences of *yo* were extremely rare, emerging only five times in the entire corpus. This discovery contrasts sharply with the data from dialogic discourse, where the ratio of *ne* and *yo* has been reported as approximately 3:1.

The present study has adopted the idea that the primary functions of these particles are to monitor and control their internal information processing. *Ne* indicates that two relevant pieces of information have been matched, whereas the function of *yo* is to self-instruct on the part of the speaker that the information in question should be re-evaluated for further inference. The highly biased distributions of *ne* and *yo* in soliloquy thus imply that matching information is a routine mental activity, but making inferences is not as frequently called for. This hypothesis surely merits further exploration and verification.

Introspection on one's thoughts is difficult because the mere act of scrutinizing thought necessarily changes one's mental state, like the observer effect in quantum mechanics.¹⁹ When trying to self-examine, one would inevitably find that thought is "a covert, intangible, elusive, and highly dynamic phenomenon" (De Guerrero 2005:9). Converting various kinds of mental constructs into language captures them and makes thought more tangible and manageable. It seems a rational development for humans to create monitoring and/or controlling mechanisms to aid themselves in effectively performing this demanding function.

The study of demonstratives also displayed the tremendous utility of soliloquy data. There have been two major accounts for the deictic use of the *ko-so-a* series, viz. the Distance and the Territory Models. The Distance Model characterizes them according to the distance of the target entity, as proximal, medial, and distal; the Territory Model considers *ko-* as referring to an entity in the speaker's territory, *so-* to one in the addressee's territory, and *a-* to neither. Our soliloquy data contained no deictic use of *so-*, supporting the Territory Model. In soliloquy, proximal items are referred to by *ko-* and non-proximal ones by *a-*, but because no addressee is involved, *so-* must be absent. Why the three-way distinction (the Distance Model) seems operative in interpersonal communication is thus yet another interesting topic deserving further exploration.

Cross-linguistically, demonstrative pronouns are frequently used as anaphoric pronouns as well. While *ko-* has been claimed to be limited to the deictic use, *so-* and *a-* have been said to be used both deictically and anaphorically. According to Kuno, *so-* is selected (i) when the speaker does not know the referent well, or (ii) when the speaker is familiar with the referent but assumes the addressee not to be. On the other hand, *a-* is selected when the speaker assumes knowledge of the referent along with the addressee. This is an interactional account. Thus, in soliloquy, when no external addressee is present, the difference between *so-* and *a-* can be restated as *a-*, indicating the speaker's familiarity, and *so-*, the lack thereof. According to Kuroda, *so-* is used when the speaker has only conceptual knowledge of the referent, while *a-* is used when the speaker's knowledge is experiential.

Our soliloquy data support neither of these characterizations. We have found that, unlike in dialogic discourse, *a-* is frequently used in soliloquy to refer to

entities displaced from the immediate speech situation. Thus, according to common linguistics practice, it should be categorized as anaphoric. However, *a-* sometimes occurs in soliloquy with an antecedent, but other times without one. In the latter case, it refers to a construct in the speaker's mind.

Although I do not equate soliloquy with inner speech, I do claim that soliloquy is one layer closer to inner speech than are the communicative manifestations of language. Therefore, soliloquy may reflect traits of inner speech that are rarely retained in outer speech. In a dialogue, when a certain mental imagery or some other type of construct occurs in the mind, the speaker must first establish or evoke it in the addressee's mind before pointing to it. Once the entity is established in the addressee's mind, it will be referenced in subsequent utterances anaphorically by a pronoun. In soliloquy, by contrast, such topic establishment or evocation is unnecessary; the speaker can immediately refer to it with a pronoun. I have determined that all occurrences of *ko-* and *a-* are uniformly deictic because dividing them into the two categories according to the presence or absence of a linguistic antecedent cannot easily dismiss the criticism of arbitrariness.

In this respect, it is appropriate to consider that *are* is used when the speaker has a reason to believe that the addressee also has the same entity in mind, regardless of previous mention. For example, suppose one is repairing a laptop and finds its interior very dusty. If she knows that the interlocutor is also familiar with such a situation, she might ask him, *Are motte kite* 'Bring that to me', assuming that the addressee knows what she wants, e.g., an air spray can.

The ultimate purpose of the present paper is to promote the investigation of soliloquy. Needless to say, the main function of language is to communicate with others. But language is also used to think. Thoughts constantly emerge in confluent streams of images, ideas, and concepts within the subconscious mind. In order to grasp and manage them, we need language. In this way, language is indispensable to development of thought. Sometimes language used as subvocalized inner speech is inadequate as a means of structuring thoughts, and we need to vocalize them, eventuating in soliloquy. As such, soliloquy provides a cornucopia of precious data accessible for a variety of linguistic investigations that merit further attention.

Notes

1. The term *soliloquy* is frequently used interchangeably with *monologue*. In the theatrical frame of reference, *monologue* usually consists of a long speech by a character addressing another character or the audience. By contrast, *soliloquy* is a speech that reveals a character's thoughts and feelings while addressing no one.

2. Although undoubtedly a minority, some take the opposite view: Steiner (1975: 125) speculates, “It may be — I will argue so — that communication outward is only a secondary, socially stimulated phase in the acquisition of language. Speaking to oneself would be the primary function [...]”
3. Vygotsky sees thought and language as having different roots, although they eventually combine. Language guides and drives thought processes.
4. To determine criteria for distinguishing sentences and/or sentence fragments, a procedure was developed based on syntactic considerations, the duration of silence, and intonational contours. For this experiment done in Japanese, word counts, a common method for analyzing English data, was not employed. In Japanese, the concept of *word* is not well established, due in part to the use of enclitic particles, agglutinative morphology, and syntactic (i.e., post-lexical) compounds. In fact, detecting word boundaries is one of the most challenging tasks in processing Japanese by computer. I therefore use the utterance as a counting unit.
5. ACC (accusative), COND (conditional), COP (copula), DAT (dative), GEN (genitive), INTJ (interjection), LOC (locative), NOM (nominative), NMLZ (nominalizer), Q (interrogative), QUOT (quotative), RH (referent honorific), SFP (sentence-final particle), TOP (topic).
6. Silverstein (1979: 193) defines linguistic ideologies as “any sets of beliefs about language, articulated by the users as a rationalization or justification of perceived language structure and use.”
7. Masuoka and Takubo (1992) argue that *watashi* is gender-neutral, while *atashi* is a female expression. Although male speakers can utilize *watashi*, its use is restricted to a formal register. In casual conversations, males do not use *watashi*. In this paper, I therefore categorize *watashi* as a female-style expression.
8. The beautifier prefix *o-* is distinct from the honorific prefix *o-* in that the former can be used for one’s own belongings, whereas the latter cannot be: e.g., *ano kata no o-cha* ‘the tea for that person (with the beautifier prefix)’ vs. *watashi no o-cha* ‘my tea (with the beautifier prefix)’ vis-à-vis *ano kata no o-namae* ‘the name of that person (with the honorific prefix)’ vs. **watashi no o-namae* ‘my name’. Both prefixes are used by both sexes, but the distribution of the beautifier *o-* is very limited in male speech (Shibatani 1990: 374).
9. Referent honorifics are, of course, not gender specific. However, because women are said to use them more frequently than men (e.g., Usami 2006), and because the male subjects in the present experiment did not use referent honorifics at all in their soliloquies, I have included referent honorifics in women’s language.
10. *Kashira* is categorized by Okamoto and Sato (1992) as strongly feminine.
11. NP + (*yo*)*ne* is judged by Masuoka and Takubo (1992) as female speech; Okamoto and Sato consider NP + *ne* to be moderately feminine.
12. Okamoto and Sato (1992) consider *none* and *noyone* to be strongly feminine.
13. *Wa* is (strongly) feminine in both the Masuoka and Takubo (1992) and Okamoto and Sato (1992) categorizations.

14. An anonymous reviewer pointed out the possibility that the female participants of my experiment use “moderately masculine” forms as their normal conversation style. If this is the case, then the difference between social conversation and soliloquy that the present paper claims disappears. Undoubtedly, my female subjects do use “moderately masculine” forms in daily conversation; however, even casual observations would confirm that, unlike in soliloquy, they do not **always** speak in such a way in conversation.

15. In order to dilute subjects’ self consciousness, an assignment of a challenging task during the soliloquy recording session might be effective.

16. Kamio (1994:77) explains that a piece of information falls inside an individual’s territory if (i) the information is obtained through the speaker’s direct experience, (ii) the information is about persons, facts, and things close to the speaker, including information about the speaker’s plans, actions, and behavior and information about places to which the speaker has a geographical relationship, or (iii) the information falls within the speaker’s professional or other expertise.

17. These three particles are frequently used to express reasons. *Shi* ‘and’ is a conjunctive particle that is used as a sentence-final particle as well (cf. Teramura 1984, Shirakawa 2001). *Mon(o)* ‘thing’ is originally a formal noun (i.e., a noun used to form a grammatical structure) that can appear in sentence-final position (cf. Teramura 1982:297–305, Tsubone 1996). Like *shi*, the conjunctive particle *kara* ‘because’ frequently ends a sentence (cf. Iwasaki 1995, Shirakawa 1995).

18. Atkinson and Shiffrin (1968:83) construe working memory in the following way: “In our thinking we tend to equate the short-term store with ‘consciousness,’ that is, the thoughts and information of which we are currently aware can be considered part of the contents of the short-term store. [...] Because consciousness is equated with the short-term store and because control processes are centered in and act through it, the short-term store is considered a working memory: a system in which decisions are made, problems are solved and information flow is directed.”

19. For example, light of a very short wavelength must be utilized in order to measure the position of an electron using a microscope. However, the collision of the electron and photons changes the electron’s momentum. That is, mere observation affects some aspects of that which is observed.

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