

Study of "Pattern as a Relation" Descriptions: Towards a conceptual reconsideration and clinical application of redundancy by Gregory Bateson

*Ryoko Hanada**

Abstract

This research, by means of a logical and empirical investigation of the communication theory of Bateson et. al., has shown that the concept of redundancy in information theory is appropriate for describing a pattern as a relation. This result makes clear that the rigidity- flexibility of relations between persons can be described by the relative [high-low] value of

$$R = \frac{(H \max - H)}{H \max}$$

in information theory, when interactions are taken as a stochastic process generating an event sequence called a 'turn allocation' that is brought out by the conversation analysis field. In Study experiments were set up in which two friends and then two strangers held a random conversation. Results showed that at any stage of the progress in the conversation, the redundancy was higher for the strangers than for the friends, and that the redundancy of interactional patterns grew as the conversation progressed. This demonstrated that the relation between strangers was more rigid than that between friends at any stage of the progress in the conversation. It also showed that the rigidity of the relation increased as the conversation progressed. From the above, Study 1 compared and contrasted relations during conversations that have traditionally been the subject of brief family therapy (Watzlawick, Beavin, & Jackson, 1967) with those that have not been. In this way, it described the differences between the two types of relationships from the view of rigidity-flexibility in the relation.

Keywords: Brief Family Therapy, Communication Theory, Gregory Bateson, Pattern as a Relation, Redundancy,

Introduction

* Associate Professor, Center for Clinical Psychology and Education Kyoto University of Education
1 Fukakusa Fujinomori-cho, Fushimi-ku, Kyoto 612-8522 JAPAN Phone&Fax: +81-75-644-8227 Email:
b95p052@gmail.com

In the interaction with the people around school, family and workplace, whether they are conscious or not, a similar exchange is repeated. For example, an interaction that is directed by either of them and the one that is induced by either of them. These interactions bring a solid peace of mind but at the same time they cause utter boredom. Gregory Bateson and his co-researchers developed the family therapy and brief therapy based on the communication theory. They thought that constant interaction among people forms a pattern known as - interaction pattern - as if it's a relationship.

Depending on the situation, this interaction pattern is sometimes stable and sometimes unstable. Such difference is called patterning. Patterning refers to the degree of excellence of the pattern and the procreation of it, corresponding to the redundancy based on the information theory (Bateson, 1972). If so, I can describe the rigidity and flexibility of interaction pattern by the degree of redundancy [high or low] and how relationship is made. However, this idea by Bateson et al has remained a theoretical consideration and explanation, it hasn't been proven.

Since the validity of this hypothesis I made from the articles of communication theory by Bateson et al hasn't been proven yet, I want to verify it through empirical experiments by using actual conversation data. These experiments will tell us if 'redundancy' of the interaction pattern derived from information theory can describe the rigidity and flexibility of relationship.

The research question is if the 'redundancy' of the interaction pattern derived from information theory can describe the rigidity and flexibility of relationship. I want to verify it through empirical experiments by using actual conversation data since the validity of this hypothesis I made from the articles of communication theory by Bateson et al hasn't been proven yet.

Objectives

The practice and study of brief family therapy is very much concerned with ongoing relationships that are (1) important to both parties and (2) long-lasting (Watzlawick et al., 1967). This is because the problems raised by clients typically involve the behavior of the client himself—actions, thoughts, feelings— or the behavior of someone with whom the client has a significant relationship (Fisch, Weakland, & Segal, 1982).

In addressing ongoing relationships, the concept of *double bind* has been emphasized again and again even while undergoing changes in subsequent follow-up papers since the concept was first proposed in 1956.

In his seminal paper published in 1956 "Towards a Theory of Schizophrenia" (Bateson, Jackson, Haley, & Weakland, 1956, 1972), Bateson described the general features of the double bind situation as one in which an individual is trapped in a relationship in which he feels it is vitally important that he discriminate accurately what sort of message is being communicated so that he may respond appropriately. This type of situation which occurs between the preschizophrenic and his mother also occurs in normal relationships.

When a person is caught in a double bind situation, he may respond defensively in a manner much like a schizophrenic.

Based on observations of patients in a mental hospital (Santon & Schwartz, 1954), Weakland (1960) noted that patients in states of manic excitement are always unaware of their own disconnect with others, and from the standpoint of patients in this state of latent disconnect, they are pulled in a diametrically opposed

direction by the person who is most important to the patient's life, yet this is often not clearly apparent to the patient.

In his 1960 paper "The Group Dynamics of Schizophrenia" (1972), Bateson observed that, when we make psychological assumptions as learners of the nature of the human individual, the double bind in the area of human relations involves an attack from the other party on the way I characterize practice and intrinsic states at the time, and the more important the other person is to me, the deeper the wounds from being rejected.

In another paper, "Minimal Requirements for a Theory of Schizophrenia" (1972), also published in 1960, Bateson observed that double bind related findings are generated from studies of relationships or infinite regress of relationships, and suggested that the study of double bind will lose its validity if the notion of relationship is discarded. Take, for example, the relationship between a controller versus one who is controlled, say the relationship between a patient and the hospital staff. Considering the acute pain of the mental patient who is momentarily treated as a human being by a member of the staff, it is apparent that the mental patient's response cannot be taken alone but must be considered in relation to his surrounding of confinement.

Bateson, Jackson, Haley, and Weakland (1963) redefined double bind in stating that the most useful way of describing the concept is not in terms of confined mental patients or as victims, but rather in terms of an individual caught up in an ongoing system that results in subjective anguish for one of the parties due to the contradictions and results of the relationship.

In his paper "Double Bind, 1969" first published in 1969 (1972), Bateson attempts to extend the double bind hypothesis to other mammals besides humans, and a learning experiment was designed involving the relationship between a trainer and a dolphin. It was found that when a mammal (the dolphin) is put into a situation where it inevitably misunderstands rules governing the relationship with another important mammal (the trainer), the dolphin manifested symptoms of acute distress and maladjustment.

According to Watzlawick, Beavin, and Jackson (1967) one characteristic of the double bind concept is that two or more persons are involved in an intense relationship that has a high degree of physical and/or psychological survival value for one, several, or all of them. Situations in which such intense relationships typically exist include but are not limited to family life (especially parent-child interaction); infirmity; material dependence; captivity; friendship; love; loyalty to a creed, cause, or ideology; contexts influenced by social norms or traditions; the psychotherapeutic situation; and so on.

Weakland (1993) summarized the essential characteristics of the double bind dilemma as follows: (1) the person has a strong bond with the other person in the relationship so feels he must correctly interpret messages from the other person in order to respond appropriately; (2) the other person conveys two conflicting messages, the second at a higher and more abstract level, so if one responds appropriately to the first message it's inherently impossible to respond to the second; and (3) because the relationship is so important, the victim cannot opt out of the relationship or make meta-communicative comments pointing out the irreconcilability of the messages for fear of jeopardizing the relationship.

Since Bateson proposed the double bind framework, brief family therapy has focused on ongoing interaction systems when investigating pragmatic effects over a prolonged period of interaction (Watzlawick et al., 1967). This is explained as follows.

"If, on the other hand, the communication between the individual and the significant others in his life are observed directly-as was suggested in the chess analogy and as is done in conjoint psychotherapy of couples or entire families - patterns of communication can eventually be identified that are diagnostically important and permit the planning of the most appropriate strategy of therapeutic intervention. This approach, then, is a search for pattern in the here and now rather than for symbolic meaning, past causes, or motivation. " (Watzlawick et al., 1967, p. 45).

This refers specifically to friendships, business or professional relationships, and, especially, marital and familial relationships (Jackson, 1965a); and also applies to couples, lovers, athletes who compete in pairs (e.g., figure skaters), friends, dormitory room mates who might serve as experimental subjects in a series of studies investigating the general characteristics of interaction from a situational perspective for brief family therapy (for reviews, see Wakashima, Hanada, & Ikuta, 2002). Besides their practical importance as social or cultural systems, such consequential groups with histories are of particular exploratory significance for the pragmatics of communication. This offers not only the opportunity but the necessity for continuous repetition of interactions leading to long-range consequences of axioms and pathologies. (Watzlawick et al., 1967).

In the study of interaction in brief family therapy as described above, ongoing relationships are given for natural networks in which we assume the proprieties and pathologies of human communication will be manifested with clearer pragmatic impact (Watzlawick et al., 1967).

While non-ongoing relationships such as exemplified by stranger groups or chance encounters could provide interesting if idiosyncratic material, unless one is interested in artificial or novel phenomena, this kind of interaction is less valuable than natural network interaction (Watzlawick et al., 1967), has attracted little interest, and has thus far not been studied from the standpoint of redundancy of interaction patterns.

This Study delves into this issue through an experimental procedure for describing pattern as a relation by setting up ongoing *Friend Pair* relationships and non-ongoing *Stranger Pair* relationships.

Here we follow Watzlawick, Beavin, and Jackson (1967) in defining ongoing relationships as those which are (1) important to both parties and (2) long-lasting. We set up an experiment involving conversations between pairs of friends (*Friend Pairs*) as ongoing relationships and conversations between pairs of strangers (*Stranger Pairs*) as non-ongoing relationships, then carefully observe the patterns of interaction redundancy as conversation progresses between strangers and friends.

Method

Trial Participants

A total of 52 university and graduate students from the Tohoku and Kinki regions participated in the study, whose average age was 22.3 years old (subjects ranged in age from 19 to 25).

Twenty-six of the participants formed 13 *Friend Pairs*, of which 6 were male *Friend Pairs* and 7 were female *Friend Pairs*. Two of the female pairs were excluded as a result of recording problems, which brought the number of pairs used in the analysis down to 11.

The participants were university or graduate students, all of whom took the same psychology course. The participants volunteered in response to a notice posted in the class soliciting "volunteers to participate in a

communications-related psychology study," and encouraging volunteers to participate together with their friends. These students were defined as involved in an ongoing relationship (Watzlawick, Beavin & Jackson, 1967).

Twenty-six additional participants also took part in the experiment forming 13 *Stranger Pairs*, consisting of 8 male pairs and 5 female pairs. Two of the male pairs were excluded due to recording problems, thus reducing the number of *Stranger Pairs* analyzed to 11.

These participants were all university and graduate students from various departments across campus. Participants volunteered in response to a flyer distributed in class soliciting "volunteers to participate in a communications-related psychology study." These students were defined as not involved in an ongoing relationship (Watzlawick, Beavin & Jackson, 1967).

The study thus involved 44 subjects who were split up into 22 pairs.

Experimental Design

The experiment was conducted as a two-factor mixed design, relationship (friend vs. stranger) x conversational flow (25 turn-taking transitions vs. 50 turn-taking transitions). Relationship is the between-subjects factor, and conversational flow is the within-subjects factor.

Experimental Setup

The experiment was set up to assess and compare conversation between *Friend Pairs* and *Stranger Pairs*. The testing room contained a video camera set up on a tripod, two chairs, a list of conversation topics, a questionnaire, and pens for filling out the questionnaire.

Procedure

Preliminary Briefing

We briefed the participants in writing and orally in advance telling them that the experiment involved conversation between two people, that the scene would be filmed by a video camera, that their privacy would be protected, and that the data would not be used for any other purpose except the present study. Only those who agreed to these terms participated in the experiment. This preliminary briefing was the same for the *Friend Pairs* and the *Strangers Pairs*.

Situational Setup

Friend Pairs

Participants were admitted to the testing room one pair at a time, and seated themselves on two chairs situated about 50 cm apart. The experimenter thanked the participants for their cooperation, then briefly outlined what they are expected to do in the experiment. After the participants consented to having their conversation filmed by the video camera, the experimenter gave the following instructions:

"Thanks for taking time out of your busy schedules to participate in this experiment. We want to film the

experiment in progress in order to analyze settings in which two people are conversing. Is that okay? The data will only be used for statistical purposes in this study alone, so your privacy is protected. Thanks again for your cooperation."

While the participants gave their consent, the experimenter set up the video camera about two meters in front of the participants, a position from which the camera had a full unobstructed view of the participants and did not interfere with the conversation or actions of the participants.

Stranger Pairs

Participants arrived at the testing room at times specified by the experimenter, and were admitted to the testing room one at a time. The participants did not know one another, and this was the first time that they met. After confirming that they had never met before, the participants seated themselves on two chairs spaced about 50 cm apart. The experimenter thanked the participants for their cooperation, then briefly outlined what they were expected to do in the experiment. After the participants consented to having their conversations filmed, the experimenter gave the same instructions as given to the *Friend Pairs*. As the participants gave their consent, the experimenter set up the video camera about two meters in front of the participants, a position from which the camera captured a full unobstructed view of the participants while not interfering with the conversation or actions of the participants.

Issue Setting

Friend Pairs

The participants chatted in two-person units. To impose some control over the conversation, the participants selected a topic from a list of conversation topics prepared by the experimenter in advance (Table 1). We considered the dialog of each pair in terms of how representative or typical the conversation was: naturalness, continuity, homogeneity. The chat session lasted five minutes. Once the subjects choose a topic, the experimenter gave the following instructions, then left the room:

Table 1.

Conversational topic list

- | |
|---|
| <ul style="list-style-type: none">✓ TV shows✓ Hobbies✓ News stories✓ Things I am into✓ Food✓ Famous entertainers |
|---|

"Now I am going to leave the room, and I want you to make conversation just as you normally do until I

come back. Choose a topic from this list, and stick to that one topic. The chat session lasts five minutes. Begin as soon as I leave the room."

After the conversation sessions were over, the participants filled out questionnaires (including questions about how they know the other person, how long they have known one another, and questions about their thoughts and impressions of the conversation session). Note that only one group of items on the questionnaire is really relevant to the purposes of the experiment, and not all of the response are examined or analyzed (see Setting Verification for details).

Once the experiment was completed, we thanked the subjects for their participation, debriefed them, and asked for their impressions of the experiment. Finally, we asked the participants not to discuss the specifics of the experiment with others so as to not bias or interfere with subsequent experimental sessions.

Stranger Pairs

The participants chatted in two-person pairs. The subjects were instructed to not mention anything about their age or year in school. This was to eliminate extraneous factors to ensure that the two actually confronted one another as strangers and also to eliminate use honorifics (*keigo*: deferential language that is appropriate when juniors address seniors) that might affect the conversation.

To impose some control over the conversation, the participants selected a topic from a list of conversation topics prepared by the experimenter in advance (Table 1). We considered the dialog of each pair in terms of how representative or typical the conversation was: naturalness, continuity, and homogeneity. The chat session lasted five minutes. Once the subjects choose a topic, the experimenter gave the following instructions, then left the room:

"Now I am going to leave the room, and I want you to make conversation until I come back. Do not reveal your ages or your years in school. Choose a topic from this list, and stick to that one topic. The chat session lasts five minutes. Begin as soon as I leave the room."

The rest of the procedures were the same as for the *Friend Pairs*.

Setup Verification

We verified that the *Friend Pairs* did actually represent ongoing relationships through two True/False questions on the questionnaire based on the definition of ongoing relationship given in Watzlawick, Beavin, and Jackson (1967): "Is the other person important to you?" and "Have you known one another for a long time?" All of the *Friend Pair* subjects answered both questions in the affirmative, thus confirming that the *Friend Pair* participants did indeed represent ongoing relationships.

Next, we verified that the *Stranger Pair* participants were not involved in an ongoing relationship. First we confirmed that the paired subjects were meeting each other for the first time and that they didn't know each other when they came to the test room at the time specified by the experimenter. All of the *Stranger Pair* subjects confirmed that this was indeed the case. We also asked the same two True/False questions that we asked the *Friend Pair* participants (Is the other person important to you? Have you known one another for a long time?), and all of the *Stranger Pair* participants responded in the negative. We thus verified that the *Stranger Pair* subjects in the experiment were not involved in ongoing relationships with the other party

making up the pair.

Finally, we showed the videos of the subjects to two raters (clinical psychotherapists) who did not know anything about the objectives of the study, and we asked them if "they could discern interaction patterns" in the videos. There was a high rate of agreement (88%) between the raters that interaction patterns were indeed present. This demonstrates that the conversation samples collected through this experiment are valid and suitable data for analyzing interaction patterns.

Analysis

Object of Analysis

All of the recorded conversation data for the *Friend* and *Stranger Pair* chat sessions were transcribed. Next, based on natural conversational breaks, we extracted 50 turn-taking transitions from the beginning of conversation (*i.e.*, 51 turns) for the *Friend* and *Stranger Pairs*.

Method of Analysis

First, referring to Maynard's definition (1993) shown below and Table 2 and referencing Kaiho and Harada (1993) for a clear understanding of what identifies a turn and the exchange of turns, we created a transcript of all the turn-taking transitions that are the object of analysis.

"*Speaker turn* is a unit of conversation in which one speaker exercises the right to speak, and the turn unit is recognized as having meaning and functional significance by the parties to the conversation. Moreover, in order to recognize a turn-taking transition, both speaker and listener must acknowledge what the turn-taker says, and the listener must assume the role of listener by using fillers. When this state is confirmed, then the speaker has taken the speaker turn" (Maynard, 1993, p. 56).

Table 2

A simplest systematic for the organization of turn-taking for conversation (Sacks, Schegloff, & Jefferson, 1974, pp. 702-704)

3.1. THE TURN-CONSTRUCTIONAL COMPONENT. There are various unit-types with which a speaker may set out to construct a turn. Unit-types for English include sentential, clausal, phrasal, and lexical constructions (cf. §4.13 below). Instances of the unit-types so usable allow a projection of the unit-type under way, and what, roughly, it will take for an instance of that unit-type to be completed. Unit-types lacking the feature of projectability may not be usable in the same way.¹²

As for the unit-types which a speaker employs in starting the construction of a turn's talk, the speaker is initially entitled, in having a turn, to one such unit. The first possible completion of a first such unit constitutes an initial transition-relevance place. Transfer of speakership is coordinated by reference to such transition-relevance places, which any unit-type instance will reach.

3.2. TURN-ALLOCATION COMPONENT. Turn-allocational techniques are distributed into two groups: (a) those in which next turn is allocated by current speaker's selecting next speaker; and (b) those in which a next turn is allocated by self-selection.¹³

3.3. RULES. The following seems to be a basic set of rules governing turn construction, providing for the allocation of a next turn to one party, and coordinating transfer so as to minimize gap and overlap.

(1) For any turn, at the initial transition-relevance place of an initial turn-constructional unit:

(a) If the turn-so-far is so constructed as to involve the use of a 'current speaker selects next' technique, then the party so selected has the right and is obliged to take next turn to speak; no others have such rights or obligations, and transfer occurs at that place.

(b) If the turn-so-far is so constructed as not to involve the use of a 'current speaker selects next' technique, then self-selection for next speakership may, but need not, be instituted; first starter acquires rights to a turn, and transfer occurs at that place.

(c) If the turn-so-far is so constructed as not to involve the use of a 'current speaker selects next' technique, then current speaker may, but need not continue, unless another self-selects.¹⁴

(2) If, at the initial transition-relevance place of an initial turn-constructional unit, neither 1a nor 1b has operated, and, following the provision of 1c, current speaker has continued, then the rule-set a-c re-applies at the next transition-relevance place, and recursively at each next transition-relevance place, until transfer is effected.

Table 3

Turn-taking coding by turn allocation

Next turn allocated by the current speaker: 0
Next turn allocated by self-selection: 1

Next, referring to a simplest systematics for the organization of turn-taking for conversation (Sacks, Schegloff, & Jefferson, 1974), we subjected the 25- and 50 turn-taking transitions for each pair of subjects, that is the object of our analysis, to create sequences of 0's and 1's representing the two modes of turn allocation shown in Table 3.

We also calculated redundancy of the sequence by a simple Markov process using a Microsoft Excel 2007 macro. Because interaction is captured in this work as sequences made up of two possible turn-allocation events

$$H_{\max} \text{ where } R = \frac{(H_{\max} - H)}{H_{\max}} \text{ and } \log_2 2 = 1 \text{ bit}$$

Specific examples are detailed in Figures 1-4. Note that Figures 2-4 are based on scenes from Edward Albee's well-known play "Who's Afraid of Virginia Woolf" (1962).

Because the redundancy value is a ratio, we performed an angular transformation (inverse sine transform),

and eliminated the approximate normal distribution assumption and distribution inequality. In the following analysis, we used values after angular transformation.

For purpose of this analysis, we accepted the position advocated by Bavelas (1994) that objectivity is nothing but inter-subjective agreement, embraced the intersubjectivity approach of Wakashima (2000) and Ikuta (2003), and adopted the following decision procedure.

We randomly extracted the *Friend* and *Stranger Pairs* one pair at a time for each condition, and had three raters (the experimenter and two graduate students) independently identify the turns and turn allocations based on Maynard's definition (1993) and a simplest systematics for the organization of turn-taking for conversation (Sacks, Schegloff, & Jefferson, 1974). We obtained a very high degree of consistency among the raters of 92.3% identifying the turn transitions and 91.5% in identifying turn allocations, so we relied on the assessments of a single rater for all the rest of the analysis.

01 C: Did you attend a coed school?
02 B: Yes, I did :
03 C: Did you get into feminism when you were in middle school and high school?
04 B: [No, I wasn't into that [:
05 C: [Umm...
06 A: Then: when did you first hear about it?
07 B: I think this after entering university.
08 A: [Umm... after entering...
09 A: And you were in the Philosophy Department, right?
10 B: No, you are way off <878> sociology.
11 C: Umm...

Figure 1. *Free conversation among three people* (Enomoto, 2009, p. 11, Fig. 2.1)

A, B, and C are speakers. Numbers enclosed in < > brackets represent length of pause time manifested during turns (in ms units). Right square brackets (]) indicates start of overlap. Colons (:) represent drawn-out vowels. Question marks (?) represent questioning intonation.

Based on the technique of the current speaker choosing the next speaker, Rule 1(a) in Table 2 is applied at 01-02, 03-04, 06-07, and 09-10.

Using the technique where the next turn is allocated by self-selection, Rule 1(b) in Table 2 is applied at 02-03, 04-05, 05-06, 07-08, 08-09, and 10-11.

Utterance 10 B is a turn that applies Rule 1(c) in Table 2. Representing generation of the interactive turn allocation sequence as a stochastic process, we have

(a)(b)(a)(b)(b)(a)(b)(b)(a)(b)

Converting the sequence to 0's and 1's according to Table 3, yields

0101101101.

When considering continuous 2-event pairs, in cases where selection of the second event depends on the probability of change in what is selected for the first event (*i.e.*, a simple Markov process), the entropy is 0.95 bits and the redundancy is 0.05.

01 G: (On her) : I'LL KILL YOU! (Grabs her by the throat. They struggle)
02 N: HEY! (comes between them)
03 H: (Wildly) VIOLENCE! VIOLENCE! (George, Martha, and Nick struggle...yells, etc.)
04 M: [persisting with her aggravation] : IT HAPPENED! TO ME! TO ME!
05 G: YOU SATANIC BITCH!
06 N: STOP THAT! STOP THAT!
07 H: VIOLENCE! VIOLENCE! (The other three struggle. George's hands are on Martha's throat. Nick grabs him, tears him from Martha, throws him on the floor. George , on the floor ; Nick over him; Martha, to one side, her hand on her throat)

Figure 2. *Four-way conversation among married couple George (G) and Martha (M), and two guests Nick (N) and Honey (H)* (Watzlawick et al., 1967, p. 164. Extracted from Edward Albee's play "Who's Afraid of Virginia Woolf," 1962)

Using the turn-allocation technique in which the next turn is allocated by self-selection, Rule 1(b) in Table 2 is applied at 01-02, 02-03, 03-04, 04-05, 05-06, and 06-07.

Here, if we generate the interactive turn allocation sequence as a stochastic process, we have

(b)(b)(b)(b)(b)(b)

which, if converting to 0's and 1's based on Table 3, yields

111111.

Here, when we consider continuous 2-event pairs, in cases where selection of the second event depends on the probability of change in what is selected for the first event, (*i.e.*, a simple Markov process), the entropy is 0 bits and the redundancy is 1.

01 M: You're gonna do what?
02 G: (quietly, distinctly) I am going to read a book. Read. Read. Read? You've heard of it? (Picks up a book).
03 M: Whaddya mean you're gonna read? What's the matter with you? You know what I'm doing, George?
04 G: No, Martha...what are you doing?

Figure 3. *Dialog between George (G) and Martha (M) in which flow of conversation is based solely on the current speaker selecting the next speaker* (Watzlawick et al., 1967, p. 167. Extracted from Edward Albee's play "Who's Afraid of Virginia Woolf," 1962)

Based on the technique of the current speaker choosing the next speaker, Rule 1(a) in Table 2 is applied at 01-02 and 02-03.

Utterances 02 G and 03 M are turns that apply Rule 1(c) in Table 2.

Representing generation of the interactive turn allocation sequence as a stochastic process, we have

(a)(a)(a)

which if converted to 0's and 1's according to Table 3, yields

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Here, when we consider continuous 2-event pairs, in cases where selection of the second event depends on

the probability of change in what is selected for the first event, (*i.e.*, a simple Markov process), the entropy is 0 bits and the redundancy is 1.

01 G: Monstre! (monster)
02 M: Cochon! (swine)
03 G: Bête! (brute)
04 M: Canaille! (scoundrel)
05 G: Putain! (whore)

Figure 4. *Dialog between George (G) and Martha (M) in which flow of conversation is based solely on turn-allocation in which the next turn is allocated by self-selection* (Watzlawick et al., 1967, p. 169. Extracted from Edward Albee's play "Who's Afraid of Virginia Woolf," 1962).

Using the turn-allocation technique in which the next turn is allocated by self-selection, Rule 1(b) in Table 2 is applied at 01-02, 02-03, 03-04, and 04-05. Representing generation of the interactive turn allocation sequence as a stochastic process, we have

(b)(b)(b)(b)

which if converted to 0's and 1's using Table 3, yields

1111.

Here, when we consider continuous 2-event pairs, in cases where selection of the second event depends on the probability of change in what is selected for the first event, (*i.e.*, a simple Markov process), the entropy is 0 bits and the redundancy is 1.

Findings

Here we examined the effects that relationships (*Friend Pairs* and *Strangers Pairs*) and conversational flow (*25 turn-taking transitions* and *50 turn-taking transitions*) have on redundancy of interactive patterns.

Figure 5 shows average redundancies for the four conditions, and Table 4 shows the relationship X conversational flow distribution results.

Results for the redundancy relationship (2) X conversational flow (2) distribution analysis reveal that the interaction is significant ($F(1, 20) = 4.9, p < .05$).

Performing a simple main effect test on relationship, we found that for *Stranger Pairs*, *50 turn-taking transitions* yielded higher redundancy than *25 turn-taking transitions* ($F(1, 20) = 22.1, p < .001$). Results of the simple main effect test for conversational flow revealed that the *Stranger Pairs* yielded higher redundancy than the *Friend Pairs* for both *25 turn-taking transitions* ($F(1, 20) = 16.25, p < .001$) and *50 turn-taking transitions* ($F(1, 20) = 34.41, p < .001$).

Considerations

This Study investigated pattern as a relation descriptions from the standpoint of relationships.

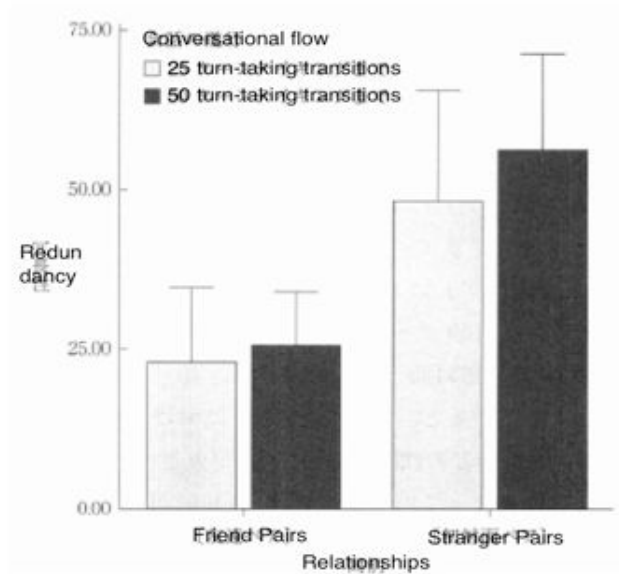


Figure 5. Average redundancy values for Friend Pairs and Stranger Pairs ($N = 22$, figures are averages after angular transformation, error bar SD)

Table 4

Distribution analysis of relationship \times conversational flow

Source of variation	Sum of squares	Degree of freedom	Mean square	F
<i>Between subjects</i>				
Relationship (A)	8639.97	1	8639.97	24.45***
Error	7066.69	20	353.33	
<i>Within subjects</i>				
Conversational flow (B)	301.75	1	301.75	19.67***
Relationship \times conversational flow (AxB)	75.11	1	75.11	4.9*
Error	306.79	20	15.34	
Total	16390.31	43		

*** $p < .001$, * $p < .05$

We set up an experiment to analyze conversations by *Friend Pairs* and *Stranger Pairs*, then explored how interaction pattern redundancy manifested with the flow of conversation depending on the nature of the relationship defined for the pairs.

For the *Stranger Pairs*, we found that *50 turn-taking transitions* revealed significantly greater redundancy than *25 turn-taking transitions*, but no such difference was observed for the *Friend Pairs*. The *Stranger Pairs* also showed greater interaction pattern redundancy than the *Friend Pairs* for both *25 turn-taking transitions* and *50 turn-taking transitions*. To briefly recap, interaction pattern redundancy is greater for the

Stranger Pairs than the *Friend Pairs* at every stage of conversation, and tends to increase as conversation continues. It is also apparent that relations between strangers in the *Stranger Pairs* are more rigid at every stage of conversation than among friends in the *Friend Pairs*, which suggests that relations tend to become increasingly rigid as conversation continues.

Let us next consider some of the more interesting implications of these findings.

As to why relations of the *Stranger Pairs* are more rigid than those of the *Friend Pairs* at every stage of conversation, we would point out two content-related factors that can be discerned from the data.

We would first note that the beginning of conversation for all the *Stranger Pairs* was taken up with introductions. This points to a suggestive study by Sugawara (1993) who analyzed 155 cases of greetings by four Gwi bushmen of the Kalahari as they encountered other males under various circumstances. When a greeting situation arises, the four bushmen calculate the genealogical between themselves and the other party and exchange greeting more frequently with men who are more distantly related than secondary in-laws (in other words, they calculate in their heads two marriage bond lineages—a man's wife's older brother's father in law, etc.). This has led to the conclusion that Gwi greeting behavior is more prevalent between males who are fairly distantly related.

Sugawara noted that, while Japanese think it's perfectly normal to attenuate or dispense with greetings among family members and others who are intimately related, the pubescent and adolescent sons and daughters of British households interact with their parents when leaving or returning home in a very formal manner that is quite amazing in its fastidiousness. The Japanese sensibility where such formal greetings among close intimates would be regarded as distant or even unfriendly may be closer to that of the Gwi bushmen than the behavior of Westerners.

Gwi greeting behavior also reflects how long it's been since the two parties have met one another: if people meet often, the greeting may be abbreviated or omitted; if they meet occasionally, they may exchange a one-on-one greeting or a brief passing hello; but if the two parties haven't seen one another for a long time, they will inevitably greet one another with an elaborate emotion-charged expression of regard.

While certainly the attributes of our data and Sugawara's data are vastly different, we nevertheless found from our data that there wasn't a single instance of a *Stranger Pair* that did not begin with introductions and greetings, much the same as Sugawara found for more distant relatives among the Gwi bushmen. More detailed analysis is required, but because a greeting beginning with "How do you do?" is the start of continuous exchange among the *Stranger Pairs*, it is apparent that using the first-pair part of an adjacency pair in the form of a greeting while looking directly at the other party illustrates next turn allocation by the current speaker selecting the next speaker. In terms of our test procedure, the fact that the *Friend Pair* subjects brought friends to the testing room meant that they had already greeted one another before the experiment even started, which is why greetings were not brought into the experiment by the *Friend Pair* participants. This being the case, we would expect *Stranger Pairs* to exhibit greater interaction pattern redundancy than *Friend Pairs* that may not include the exchange of greetings.

The second factor we observed is that, in all *Stranger Pair* cases, the participants engaged in information gathering and back-and-forth information exchange after making introductions and greetings. One suggestive approach that sheds light on this phenomenon is politeness theory.

Politeness is social linguistic behavior intended to uphold and sustain relationships (Levinson, 1983), and is an expression of the speaker's intention to mitigate face threats to another for the purpose of facilitating smooth interactions. The term *politeness* per se is limited, for it assumes that politeness rules and strategies are based on universal global reach¹ (Lakoff, 1973; Leech, 1983).

According to Brown and Levinson (1987), politeness is the most inclusive and representative concept in politeness-related research (Coulthard, 1989). Interaction involves the notion of *face*. Face—equivalent to the Japanese term *mentsu*—comes in two forms: positive face (the desire to have one's self-image approved of by others) and negative face (the desire for one's actions or territory to not to be imposed upon). A face-threatening act (FTA) is an act that inherently damages the face of the addressee or the speaker. The following five politeness strategies are available when dealing with face-threatening acts to the listener: when the estimation of risk of face-loss is extremely low, (1) unambiguously state the FTA *without redressive action, baldly*, but if the estimation of risk of face-loss is high, (2) a *positive politeness* strategy seeks to minimize the treat to the hearer's positive face by saying things to make the hearer feel good about himself, (3) a *negative politeness* strategy is a comment oriented toward the hearer's negative face, (4) an *off-record* strategy involves insinuating language without directly asking the listener to do something, and finally (5) a *do not do a FTA* involves not doing the act that could threaten the face of the listener.

Mimaki (2002) analyzed the above politeness strategies using data collected from 37 pairs of strangers, university students brought together for 15-minute free conversation sessions in pairs. Mimaki found that, when strangers converse for the first time, they tend to engage in more back-and-forth information gathering and provisioning to gauge the character of the other person and place. While protecting negative face so as to not impinge on each other's negative face, they also bolster one another's positive face by showing interest in the other person.

Just as described by Mimaki (2002), we also observed from our data that the *Stranger Pairs* exhibited far more back-and-forth information gathering and provisioning than the *Friend Pairs*, reflecting greater consideration of mutual face. Again more detailed analysis is required, but because *Stranger Pairs* engage in mutual information gathering, it is apparent that using the first-pair part of an adjacency pair in the form of a question while looking directly at the other party illustrates next turn allocation by the current speaker selecting the next speaker. We conjecture that the increased interaction pattern redundancy of the *Stranger Pairs* compared to the *Friend Pairs* can be attributed to the repeated questions and corresponding attention seen in the conversation of the *Stranger Pairs* that is not required by the *Friend Pairs*.

In addition, the reason relations between strangers in the *Stranger Pairs* are more rigid at every stage of conversation than between friends in the *Friend Pairs* is linked to the fact that the current speaker selects the next speaker as a result of the (1) exchange of greeting at the beginning of the conversation, which leads into (2) mutual back-and-forth information gathering and provisioning.

Next, let us consider why the *Stranger Pair* relations become increasingly rigid as the conversation continues, while the *Friend Pair* relations remain unchanged as the conversation continues.

This finding reflects ordinary intuitive experience. Relationships between friends, once established, do not

¹ Others have pointed out that the universality of politeness theory does not adequately address certain features of different languages. Ide (1989), for example, has suggested that the notion of discernment (*wakimae*) is required to explain Japanese honorifics, language usage rules that have become conventionalized (Mimaki, 2007).

change quickly, but relationships between strangers tend to change very abruptly—indeed, they may realize that they are not strangers after all as soon as they start talking. And, as we observed earlier, conversation between strangers generally involves a certain amount of give-and-take during which they introduce one another and gather/present information about one another until they begin to feel more at ease, and this accounts for the significantly greater redundancy of interaction patterns as the conversation continues.

Nakayama (2003) proposed a closeness communication model based on five hours of two-person conversation data between strangers (a total of eight 30-minute sessions held over a four-month period). Here the term *closeness* refers to a psychological distance where the participants both would draw closer in an agreeable relationship, that encompasses a sort of social distance. The model captures phases of closeness at both the micro level (three levels are defined: initial, development, and plateau or descent) and the macro level (utterance units). At both macro and micro levels, Nakayama (2007) found that the psychological distance shifted, and throughout the entire process of change, the two made continual adjustments in an effort to preserve the feeling of closeness between them. While the process of change followed something of a zigzag pattern, Nakayama observed that the interaction between the participants promoted closeness that maximized the sense of familiarity and comfort with one another.

Getting back to our results, we too observed some of this zigzag pattern in the 25 *turn-taking transitions* and 50 *turn-taking transitions* changes of the *Stranger Pairs*, but this only occurred in the *Stranger Pairs*, not in the *Friend Pairs*. This suggests that ongoing relationships such as modeled by the *Friend Pairs* are fairly characterized by stability.

Now let us briefly highlight the significant finding of the study.

Because brief family therapy interaction studies to date have largely dealt with ongoing relationships, it's hardly surprising that little interest has focused on non-ongoing relationships, and indeed relationships that are not ongoing have not been substantiated in terms of redundancy of interaction patterns. This Study explored the nature of ongoing relationships for brief family therapy by comparing and contrasting ongoing with non-ongoing relationships. These findings were then highlighted in terms of redundancy, while identifying some of the interesting and idiosyncratic elements such as stranger groups or chance encounters that have been described by Watzlawick, Beavin, and Jackson (1967).

References

- Akiko, N. (2003). *Kuroshio kai bukkusu Shitashisa no komyunikeshon* [Communication of familiarity]. Tokyo, Japan: Kurosio Publishers.
- Akiko, N. (2007). *Shitashisa wo tutaeru* [Transmission of familiarity] . In N. J. Shuppan (Ed.), *Kotoba no komyunikeshon* (pp. 50–65). Kyoto, Japan: Shuppan, Nakanishiya.
- Albee, E. (1962). *Who's afraid of Virginia Woolf?* New York, USA: Atheneum Books.
- Bateson, G. (1972). *Steps to an ecology of mind: Collected essays in anthropology, psychiatry, evolution, and epistemology*. Illinois, USA: University Of Chicago Press.

- Bateson, G., Jackson, D. D., Haley, J., & Weakland, J. H. (1956). Toward a theory of schizophrenia. *Behavioral Science*, 1, 251–261.
- Bateson, G., Jackson, D. D., Haley, J., & Weakland, J. H. (1962). A note on the double bind-1962. *Family Process*, 2, 154–161.
- Bavelas, J. B. (1994). Gestures as part of speech: Methodological implications. *Research on Language and Social Interaction*, 27, 201–221.
- Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language usage*. Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language usage*. Cambridge: Cambridge University Press. Cambridge, UK: Cambridge University Press.
- Coulthard, M. (1989). *An introduction to discourse analysis: Applied linguistics and language study*. London, UK: Longman.
- Fisch, R., Weakland, J. H., & Segal, L. (1982). *The tactics of change: Doing therapy briefly (The Jossey-Bass social and behavioral science series)*. California, USA: Jossey-Bass.
- Hiroyuki, K., & Etuko, H. (1993). *Purotokoru bunseki nyumon* [Introduction to protocol analysis]. Tokyo, Japan: Shinyosha.
- Ikuta, M. (2000). *Taijin system ni okeru jiko seigyō kikou ni kannsuru kenkyū* [Research on self-regulation mechanism in interpersonal system]. Unpublished doctoral dissertation. Tohoku University, Miyagi, Japan.
- Jackson, D. D. (1965). Family rules: marital quid pro Quo. *Archives of General Psychiatry*, 12, 589–594.
- Kazuyoshi, S. (1993). *Shintai no jinruigaku* [Anthropology of the body]. Tokyo, Japan: Kawade Shobo Shinsha.
- Lakoff, R. T. (1973). The logic of politeness; or minding your P's and Q's. In C. Corum, T. C. Smith-Stark, & A. Weiser (Eds.), *The Ninth regional meeting of the Chicago Linguistic Society* (pp. 292–305). Chicago, USA: Chicago Linguistic Society.
- Leech, G. N. (1983). *Principles of pragmatics*. London, UK: Longman.
- Levinson, S. C. (1983). *Pragmatics*. Cambridge, UK: Cambridge University Press.
- Maynard, Senko K. (1993). *Discourse modality: subjectivity, emotion, and voice in the Japanese language*. Amsterdam: John Benjamins.
- Mika, E. (2009). *Nihongo ni okeru kikite no washa iko tekikakujo no ninchi mekanizumu* [Recognition mechanism of Transition Relevance Place of listener in Japanese]. Tokyo, Japan: Hitsuji kenkyu soshō.
- Mimaki, Y. (2002). Politeness between Native Speakers of Japanese as seen through Speech Level Control. *The Japanese Association of Sociolinguistic Sciences*, 5(1), 56–74.
- Mimaki, Y. (2007). Polaitonesu riron to syotaimen kaiwa [Politeness theory and first meeting conversation]. In N. J. Shuppan (Ed.), *Kotoba no komyunikeshon* (pp. 30–49). Kyoto, Japan: Shuppan, Nakanishiya.

- Ide, S. (1989). Formal forms and discernment: Two neglected aspects of universals of linguistic politeness. *Multilingua*, 8, 223–248.
- Sacks, H., Schegloff, E. A., & Jefferson, G. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language*, 50, 696–735.
- Stanton, A. H., & Schwartz, M. S. (1954). *The mental hospital: A study of institutional participation in psychiatric illness and treatment*. New York, USA: Basic Books.
- Wakashima, K. (2000). *Kattoutekikaiwabamen ni okeru “kaihiteki kommunikeshyon” no seiki no mekanizumu ni kansuru kenkyu-diskuorifikeshyon ga seikisuru jyoukyou no kaimei ni mukete-* [Studies on the mechanism of the occurrence of “Avoiding Communication” in the conflict conversation]. Unpublished doctoral dissertation. Tohoku University, Miyagi, Japan.
- Wakashima, K., Hanada, R., & Ikuta, M. (2002). Developments in communication theory in Japan: From management language to research on the problem-interaction model. *Japanese Journal of School Counseling*, (5), 23–30.
- Watzlawick, P., Bavelas, J. B., & Jackson, D. D. (1967). *Pragmatics of human communication: A study of interactional patterns, pathologies, and paradoxes*. New York, USA: W.W. Norton & Company.
- Weakland, J. H. (1960). The “double-bind” hypothesis of schizophrenia in three-party interaction. In D. Jackson (Ed.), *The etiology of schizophrenia* (pp. 373–388). New York, USA: Basic Books.
- Weakland, J. H. (1993). Daburu bairind no igi to tennkai [Expansion and significance of double bind]. *Japanese Journal of Family Psychology*, 7, 1–14.