

Participatory Assessment of the Environment from Children's Viewpoints: Development of a Method and Its Trial

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MORIYAMA, M., SUWA, T., KABUTO, M. and FUKUSHIMA, T. *Participatory Assessment of the Environment from Children's Viewpoints: Development of a Method and Its Trial.* Tohoku J. Exp. Med., 2001, **193**(2), 141-151 — To understand the actual viewpoints of children about daily life and the environment, the authors, adopting a participatory strategy, visited 21 classes of Japanese school children, improved in a stepwise process their ways of question-asking, and developed "WIFY"(what is important for you); a set of interactive questions composed of a basic question and three accompanying instructions. In applying WIFY, 59 fourth graders, 22 in Nagasaki, Japan and 37 in Beijing, China, reported their viewpoints in each of classroom settings. In both settings, when children were allowed to communicate with each other by the use of WIFY answering sheet, spontaneous exchanges arose and continued. WIFY itself is supposed to bring out and enhance mutual collaboration and spontaneous networking. In this instance, WIFY functioned as a communication tool. When answering sheets were collected and obtained responses were analyzed as cases, a rather materialistic view was suggested among Japanese children and a more disciplined view, which put much value on school and home, was suggested among Chinese children. Further studies are needed to confirm the changing environmental views of children from the collaborative research framework. ——— children's viewpoints; daily life and environment; collaborative and participatory assessment; Japanese and Chinese children

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Recent Japanese surveys report a rapid shift in the life circumstances of children toward a more artificial and urbanized situation lacking a humanistic quality of life (Tokyo Metropolitan Educational Institute 1999). Other surveys report the children's rather unstable psychological conditions (Fukaya 1998). Increasing difficulty in sharing values between children and adults makes the situation worse (Okhara 1995).

To promote better quality of life (QOL) and healthy lifestyle for children, it is necessary to understand the reality of their daily life and environment from their viewpoints. However, most of environment and/or health-related questionnaires available are designed from the viewpoints of adult researchers while children's viewpoints are not fully considered. The authors tried to develop a new way of obtaining meaningful replies from children regarding their daily environment.

Obtaining cooperation from children in the classroom situation supposed to be the essential part of the study, and yet, it seemed difficult to do so. Because Japanese children are considered to be shy and passive in giving their personal view in the class, and as the result,

they are usually not given enough chances to think and communicate collaboratively in the class. However, according to our previous trials regarding health education, Japanese children are enough active when their own viewpoints are encouraged. Therefore, in the present study, the authors hypothesized the active and receptive nature of Japanese primary school children in sharing and communicating their personal view under the favorable assistance. The authors adopted collaborative strategy (Bruffee 1999) to learn from children's viewpoint.

In the first stage of development, the authors tried to guide children's independent reflection and thinking about their environment by developing interactive inquiries. When each of children is successfully guided to give their unique replies, the further interactions are expected to follow. In the second stage, the developed inquiries were applied in two classroom situations in Japan and China, with special interests regarding the growth of collaborative atmosphere among children.

TABLE 1. *Schools and classes visited during the developmental phase*

School	Year ^a	School grades	No. of classes visited	No. of subjects; total (males, females)	Topics of inquiry
A	1994	4, 5, 6	3 (1 for each grade)	65 (30, 35)	Disastrous environment (volcano)
B	1996	2, 4, 6	6 (2 for each grade)	235 (117, 118)	Disastrous environment (earthquake)
C	1998	5, 6	6 (3 for each grade)	190 (109, 81)	Usual environment
D	1998	4, 5, 6	6 (2 for each grade)	150 (78, 72)	Usual environment
Total			21	640 (334, 306)	

^a Year of first visit.

PHASE OF DEVELOPMENT

Subjects and Methods

Looking for the suitable ways to ask questions, the authors planned class-based interactive inquiries. During five years from 1994 to 1998, a total of 21 classes at 4 primary schools in the southern part of Japan accepted our experimental planning and scheduled at least two visits to share in the trial inquiries (Table 1). Of all these four schools, two of them had experienced natural disasters such as volcanic eruptions and earthquakes, respectively. Another two schools were enjoying normal and peaceful environments. In all of these school settings, the common issue of inquiry was the important and meaningful environment for children. Before the visit, the authors interviewed schoolteachers, and obtained preliminary keywords regarding the children's environmental situations.

On these visits to the class, the authors were given a whole time period (usually 40 minutes). At the beginning of period, one of the author visited the class, explained the study purpose, distributed work sheets to write down and started to ask simple questions, such as "what is your important environment?." When some child raised the hand, the author nominated the child to share his/her idea as an example. If necessary, the author wrote additional remarks on the blackboard to facilitate children's responses. This kind of interactive inquiry continued for the most of period. Throughout the whole period, the author encouraged children to write down any of their

ideas that came to their mind. At the end of period, work sheets were collected and a database was prepared to keep any of children's written responses. After the first visit, possible improvements in asking the questions were checked and supplemented by the direct observation of children. At the second visit and afterwards, the improved ways were tried and confirmed. Favorable ways in asking questions and their accompanying case-based evidences regarding children's responses were accumulated to yield the basic strategies to ask questions.

Results

The following strategies were obtained regarding the better ways to ask questions;

Strategy 1: Encourage the children to reply by filling several blanks. The authors did not expect too much from initial stage of the inquiry but pursued all minimum and meaningful individual responses by each of the children. As a result of these trials, the authors decided to encourage the children to reveal their ideas by filling some blank spaces with single words or a simple phrase. Although seven spaces were too demanding for some children, three spaces were not enough to disclose the individual profile of child. Finally, the present strategy of using five blank spaces was fixed.

Strategy 2: Involve the children to think of their own. As already described in the method section, the first question was simple. If the children did not respond well to the first question, the author usually added some explanations to the question. If the children's response

TABLE 2. *The participatory process of improving questions*

Degree of involvement	Examples of questions
Less	"Name important matters in life."
More	"Imagine what life is. Name five important matters in your life."
Much more	"Imagine your daily life beginning in the morning, continuing through into the afternoon and evening. Then, name five important matters in your life that you will miss if you lose them."

TABLE 3. *Typical responses when children were asked about their daily life by the use of two different key words*

Two alternative key words	Children's responses
"Kankyo" (environment)	Case 1; "Water, clean air, exhaust gas, carbon dioxide, wastes" Case 2; "Water, food, oxygen, electricity, house" Case 3; "Rain fall, air, earth, the sun, tree"
"Koto" (matter)	Case 1; "My desk, TV, toilet, Kotatsu (leg warmer), game" Case 2; "Friends, house, bicycle, rice, video" Case 3; "My house, TV, clothes, family, money"

Inquiry; Name five things of importance in your daily life related to ("Kankyo"/"koto").

was still not detailed, the author added another explanation or modified the question. If the children's responses improved, the initial version of the question was replaced by the successful version, which was further tuned. The typical process of adding and improving questions is shown in Table 2. Better responses were obtained when children were progressively involved in answering the question.

Strategy 3: Avoid the word "kankyo (environment)" when asking about the child's life and environment. Table 3 shows two examples of three individual responses when children were asked about the importance in their life. In the upper half of table 3, the word "kankyo (translation: "environment")" was used in the inquiry. These children seem to have replied to the question by giving their acquired knowledge regarding the environment, knowledge that was obtained through school-based education and/or through some other media. The replies do not seem to reflect the real life experiences of the children. In the lower half of table 3, instead of the word "kankyo (environment)," the word "koto (matter)" was used. There the responses obtained seem to reflect the actual concern of the children. Therefore, the present strategy was developed to avoid the word "kankyo."

Strategy 4: Encourage the children to make systematic changes in their viewpoints while they are thinking about their life. Three strategies were effective in asking questions to disclose the real life perceptions of the children. However, "asking about life" is not equivalent to "asking about the environment." Therefore, in addition to the first three strategies, the authors scrutinized additional strategies to bring the questions "asking about life" closer to questions "asking about the environment." Hints were obtained when the authors developed different questionnaire formats for two schools (C and A) in addition to the ongoing interactive inquiries. These two schools were under the contrasting environment (Table 1 and 4), and the survey objective was to reveal the major profile of the children's lives in their unique environment. The major contents of the questionnaire were obtained as the result of preliminary discussions with the classroom teachers and the children. In school C (Table 4, upper part), children were living in a peaceful rural setting. Major content headings reflect the rather time-sequenced daily customs and/or habits of children. Although various dimensions of environments such as family and region appear on the face sheet, these dimensions are supposed to be independent from the following major content headings. In this example (Table 4, upper

TABLE 4. *Two examples of designing a questionnaire regarding daily life*

Format C in the usual environment	
Face sheet headings	Family profile, occupation of parents, region
Major content headings	Having breakfast/lunch/supper, learning at school, playing inside, playing outside, assistance for housekeeping, watching TV and video, doing homework, etc.
Format A in the unusual environment	
Face sheet headings	Present family profile, present occupation of parents, present region, degree of household damage by volcanic activity
Major content headings	The neighborhood was evacuated, wearing a helmet/mask/goggles, foods and commodities were temporarily allocated, forced to move to a new house once/several times, transfer to a community shelter and assignment to a new school, family was separated, parents found their new jobs, playgrounds were covered by ash, new friends and new amusements, studying in a temporary school building, etc.

part), “asking about life” is very much different from “asking about environment.”

In school A (Table 4, lower part), children experienced a volcanic disaster. In this unusual environment, the usual format of C was not enough to reveal the typical life of the children. According to discussions with the teachers and the children, it became clear that the children’s daily life was invaded and modified by environmental changes resulting from volcanic eruption. In other words, even in doing their daily routine, children were naturally guided to face the various environmental dimensions, and this situation was clearly reflected in the major content headings (Table 4, lower part). In this example, “asking about life” overlaps with “asking about the environment.”

From these two field experiences, the authors found the importance of guiding children to take different viewpoints while thinking about their life. If children are effectively encouraged to look around systematically, even those children experiencing an ordinary and

peaceful environment will notice the effect of the environment on their life. Consequently, the authors introduced the three following views to enable the children to shift their mental perspective; “a personal viewpoint,” “a communal viewpoint,” and “a global viewpoint.”

The set of questions developed

Based on these four strategic assumptions, a set of interactive questions was prepared, and these were named “WIFY” (what is important for you) in June, 1998. The basic question of WIFY is as follows; “Name five matters of importance (koto) in your life that you would miss if you lost them.” This same basic question is asked in each of the following three situations;

(a) “Imagine your daily life beginning in the morning, continuing through into the afternoon and evening.”

“Then, name five matters of importance

(b) “Imagine your home, your neighbors, your

school and your community.”

“Then, name five matters of importance
.....”

(c) “Imagine your region, your country as a
whole, your continent, and the planet earth.”

“Then, name five matters of importance
.....”

PHASE OF TRIAL

Since the development of WIFY was completed, the authors started to ask WIFY for surrounding people including colleagues and children. Conjoint findings were that, by asking WIFY, subjects almost always take collaborative attitude and willingly offer their personal views. It is as if WIFY itself bring out and enhance collaboration. However, it is not yet known whether WIFY shows such collaborative effect only in the Japanese cultural setting. If WIFY also guides collaborative thinking in other settings, the constructive basis of WIFY will be enhanced. As three of authors already have research interests in China, the authors planned to observe the effect of WIFY in comparative situations in Japan and in China. The following two points were considered for the observation; 1) arousing interests and fun; whether subjects are interested in and enjoy asking WIFY questions, 2) meaningfulness; whether the derived replies to WIFY questions are more meaningful than arbitrary and/or accidental for each subjects.

Subjects and methods

In each country, we selected a suburban area in a historical city, Nagasaki in Japan and Beijing in China. In each of suburban areas, we asked local school boards to recommend a school to permit asking WIFY questions to reveal children's viewpoints collaboratively. In each area, a school accepted our proposal and made arrangements to visit a class of forth-grade children (9 to 10 years old). In both schools, the school principals were eager supporters of environmental education. The idea

of a participatory trial of identifying and assessing the perceptions of children was accepted with great interests in both settings, because they did not have any idea about the children's viewpoints regarding life and the environment.

WIFY trials were scheduled during February 1999 in Nagasaki, and during November 1998 in Beijing. In both settings, a whole time period (40 minutes) was initially assigned for the trial. At the beginning of period, one of the author (M.M.) visited the class, distributed WIFY answering sheet and started explanations for the meaning of WIFY. For Nagasaki children ($n=22$), all of oral and written explanations were given in Japanese. For Beijing children ($n=37$), a Chinese version of written instruction was prepared in advance. An experienced interpreter was present, and the author's oral Japanese instructions were simultaneously translated into Chinese.

Results

Observed responses of children. Although the initial oral explanation took nearly 5 minutes in Nagasaki, the same explanation took nearly 20 minutes in Beijing, because the Chinese translation and additional descriptions took more time than expectation. After this, children responded more smoothly in both settings.

When most of children finished filling in their replies to a given WIFY question (mostly within 7 to 8 minutes), the author guided children to reflect the meaning of their replies and encouraged them to take additional notes for the reason of their replies. At this phase, a few of children erased some of their initial replies and filled in new ones. However, most of children did not take any of such behaviors, and continued to take notes.

At the time when most children had filled in all of three WIFY questions, children started to whisper here and there in the classroom. The typical response was taking a glance into the neighbor's working sheet with a smile.

This type of spontaneous exchange was observed both in Nagasaki and Beijing. In each setting, teachers, who were observing the class, were surprised by this spontaneous exchange of personal concerns among children. Afterwards, the teachers were interested in this reaction and gave us consents to allow children to continue this personal exchange until the end of period. Especially in Beijing, the initial time period

was almost over when children started exchanges, and an additional period was offered for the continuation. In both settings, the authors encouraged children to continue such exchanges without hesitation. During the rest of time, children met several of their peers and exchanged their concerns.

Distribution of Keywords. For three basic

TABLE 5. *Japanese children's responses summarized for the top ten important words*

Personal view (130 words, 5.9/person)			Communal view (143 words, 6.5/person)			Global view (125 words, 5.7/person)		
Rank	Word	(%)	Rank	Word	(%)	Rank	Word	(%)
1	Foods	50.0	1	Shops	63.6	1	Nature	36.4
	Money	50.0	2	Nature	50.0	2	Home	31.8
2	Family	45.5	3	Sea	45.4	3	Shops	27.3
3	Water	36.4	4	Trees	40.9	4	Car	22.7
4	Friends	31.8	5	Air	31.8		Food	22.7
	Game	31.8		Electricity	31.8		Human	22.7
6	Air	22.7		Forests	31.8		Money	22.7
	Home	22.7		Mountain	31.8		Water	22.7
	Life	22.7	9	Home	27.3	9	Fire	18.2
	Toilet	22.7		River	27.3		Nation	18.2
	TV	22.7						

$n = 22$ (male = 14, female = 8).

TABLE 6. *Chinese children's responses summarized for the top ten important words*

Personal view (253 words, 6.8 words/person)			Communal view (267 words, 7.2 words/person)			Global view (288 words, 7.8 words/person)		
Rank	Word	(%)	Rank	Word	(%)	Rank	Word	(%)
1	School	56.8	1	Rivers	59.5	1	Water	75.7
2	Homework	51.4	2	Kindergartens	56.8	2	Air	54.1
3	Face washing	37.8	3	Gas stations	54.1	3	Schools	48.6
	Teeth brushing	37.8		Trees	54.1		Trees	48.6
5	TV	32.4	5	Fields	43.2	5	Electricity	45.9
6	Eating	29.7	6	Factories	37.8	6	Animals	43.2
7	Water	27.0	7	Forests	29.7	7	Flowers	37.8
8	Games	24.3		Grass	29.7	8	Grass	32.4
	Sleep	24.3		Shops	29.7	9	Forests	27.0
	Study	24.3	10	Flowers	24.3	10	Tian'anmen square	
				Public corporation				24.3
					24.3			

$n = 37$ (male = 18, female = 19).

WIFY questions, 22 Japanese children gave total of 398 keywords (130, 143, 125) (Table 5), and 37 Chinese children gave total of 808 keywords (253, 267, 288) (Table 6).

In the personal viewpoint, half of Japanese children referred to “money” and “foods.” In contrast, more than half of Chinese children valued “school” and “homework.” The name of “school” did not appear among the top ten keywords of Japanese children.

In the communal viewpoint, more than half of Japanese children referred to “shops,” and more than half of Chinese children referred to “rivers,” “kindergartens,” “gas stations” and “trees.”

In the global viewpoint, the top of two keywords were “nature” and “home” for Japanese children, and “water” and “air” for Chinese children.

Case-based details of keywords. In order to understand each child’s unique view of life and the environment, the uniqueness of which might have sustained their enthusiasm for spontaneous exchanges, all replies to three basic questions are scrutinized for ten individual cases in Nagasaki and in Beijing.

In Nagasaki (Table 7), four children (case 2, 5, 8, 10) mentioned some particular games and/or toys in the personal view, and four

TABLE 7. *Japanese children’s case based responses*

Case	Personal view	Communal view	Global view
1	Sleep, pillow, blanket, vehicle, life human, toilet paper, money	Store of Akagi, tree, forest, air, sea, mountain, public office of Kosasa, match	Human, senator
2	Toy-Lego block & model car & toy-mini car & doll, money, human life, toilet, meal-Gohan	Electricity, shop-Hellow & BanBan, fire, car, bicycle	Shop-Jasco, Tokyo tower, eyeglass, TV, Hokkaido
3	Family, brothers, life, TV, friends	House, electric pole, tree, shop, school	Bath, town, gas station, car, nature
4	Home, family, foods, money, water	Tree, grass, shop selling vegetables, air, home	Home, fire, water, money, food
5	Clothes, shoes, game computer-Nintendo & Superfamicon, toilet & t-paper, air, money	Shop-Super Kosasa, nature, trees, leaves, mountain, school, public office, sea, river	Food, air, nature, home, water
6	Meal, umbrella, refrigerator, air conditioner, family, home, money	Nature, mountain, river, forest, shop (Super & Family Mart & Iwai), friends, waterworks facilities, dam, electric power plant, playing facilities, parks	World, Japan, USA, Brazil, Spain, stars, spaces, planet Mars & Saturn, the earth, ships, cars, people, scientist, friends, myself
7	Money, water, family, food, rice	Mountain, fields cultivating, sea, home, electricity	Fire, space-station, home, nation
8	Game -Playstation & Final fantasy, home, TV, foods, drinks, money	Friends, electricity, peace, nature, shops	Peace, nature, electricity, TV, money,
9	Water, food, family, money, river	Tree, air, plant-Kenaf, home, land	Earth, the sun, the moon, home, fire
10	Breakfast, exercise, lunch, money, game-cards	Nature, human, friends, foods, air	President, nation, human, water, electricity, parents

TABLE 8. *Chinese children's case based responses*

Case	Personal view	Communal view	Global view
1	Homework doing, housework doing, lessons reviewing, games playing, going to school, water drinking, soccer playing, flowers watering, eating, TV watching	Small forests, kindergarten, bridges, armies, gas stations, rivers, shops of Beihu, fields, restaurants	Water, the sun, hometowns, animals, the air, trees, campuses, meals
2	Going to school, TV watching, games playing, homework doing, soccer playing	Fields, rivers, kindergarten, trees, gas stations	Water, the air, animals, plants, schools
3	Teeth brushing, face washing, going to school, cleaning the classroom, playing after class, eating, homework doing, TV watching, sleep	Roads, factories, bridges, school gate, studying, high schools, villages, rivers	Bridges, the air, roads, vehicles, water, grain, street lamps, animals, human beings, schools, trees, flowers, houses, lands
4	Electricity, water, grain, trees, parents, classmates, home, sleep, schools, teachers, birds	Electricity, TV, study, water, trees, families, parents, birds, the sky	Electricity, TV, water, trees, the sky, birds, families, parents, teachers, study, schools, classmates, the earth
5	Getting up, face washing, home going, homework doing, classrooms cleaning, going to school, vegetable washing	Public corporation, forests, gas stations, restaurants, factory, rivers	Water, vehicles, Tian'anmen, fields, animals, the air, electricity, constructing sites
6	Study, classrooms cleaning, going to school, lessons reviewing, vegetables washing, cooking	Public corporation, gas stations, restaurant, kindergartens, fields, factory vehicle, trees	Vehicles, bicycles, flowers, grass, trees, animals, fish, rivers, the air
7	Going to school, lessons reviewing, care from the teacher, games playing, TV watching, housework doing, homework doing, vehicles, time	Fields, trees, flowers, water, animals, factory, public corporation, friends, kindergartens	Water, forests, plants, the air, grain, human beings, animals little, friendship, electricity, computers, the army, motherland, schools, historical sites
8	Books, school bags, classrooms, vehicles, clothes	Forests, power stations, gas stations, rivers, kindergartens, public corporation, factories-electric line	Water, vehicles, the air, rice, houses, schools
9	Our schools, games, my mother, teachers, textbooks, our campus	Bridge in our village, our school, my mother, our teachers, our village	Our homeland, our earth, water, grain, mothers, trees, flowers, grass
10	Eating, water drinking, feet washing, flowers watering, toys playing, sleep, TV watching, friends playing with, study, homework doing, going to school	Villages, forests, kindergartens, gas stations, rivers, houses, fields, crossings, shops, public corporation	Houses, hometowns, flowers, trees, eating, water clean, lands, animals, fishes

children (case 1, 2, 5, 6) mentioned particular shops that sell games, videos, comic books, stationery and other goods for children. This type of referring to particular brand names of goods and shops was not observed among children in Beijing. Most children in Beijing (Table 8) used many more words to describe their daily life related view than children in Nagasaki did. In comparison to children in Nagasaki, children in Beijing appear to be more disciplined and to put greater value on school and home.

DISCUSSION

The product of this study, WIFY, is a set of interactive inquiries to learn from the children's viewpoints. When WIFY was applied in two classroom situations in Nagasaki and Beijing, children in both circumstances successfully filled all of blanks within a limited amount of time. In this instance, WIFY is supposed to function as an assessment tool to derive the children's own views in a written format. Interesting is that in both circumstances, after children filled WIFY, they started to interact each other looking and chatting about their writings. In this instance, WIFY is supposed to function as a communication tool to invite children's spontaneous networking within a class. To use WIFY in the field of children's environmental health promotion, both of its potential functions, assessment and communication, should be discussed.

As an assessment tool, characteristic of WIFY lies in its relying on the spontaneous responses of children. The usual questionnaire survey demands enough preliminary data beforehand to prepare meaningful questions and choices. However, this condition is especially difficult to be attained within a limited chance to communicate with children. In this instance, the advantage of WIFY lies in its free-handedness that opens access to children's viewpoints at the first encounter. After WIFY is applied, the results obtained are composed of

keywords offered by the respondent. Therefore, WIFY is essentially a tool for qualitative assessment. Only when obtained keywords are classified and counted, WIFY will function as a quantitative assessment tool. In tables 5 and 6, quantitative data regarding the frequency of keywords are shown for two class-room situations. Because of the smallness of sample size, it is too early to derive any population based conclusion regarding the results. The observed differences between Nagasaki and Beijing should be clarified in the future studies.

As a communication tool, keywords extracted by WIFY caused children to think and interact each other in Nagasaki and Beijing. The following traits are sequentially observed in both classroom settings;

1) Just before WIFY; Children do not have previous chances to know each other about their personal views regarding environment.

2) At the beginning of WIFY; Children want to know each other about their personal views regarding environment.

3) Just after WIFY; When children encounter views of their peers, they enjoy the chance and tend to seek further encounter by chatting and asking questions.

Especially, two of traits (2 and 3) accord with our initial working hypothesis that primary school children are active collaborators and learners. Children apparently welcomed WIFY and enjoyed using it.

Considering the interactive and collaborative nature of WIFY observed in its assessing and communicating functions, the role of WIFY has some similarity with PRA (participatory rural appraisal) (Chambers 1994), a growing family of approaches and methods to enable local people to share, enhance and analyze their knowledge of life and conditions, to plan and to act. The present strategy of asking participatory questions should be continuously investigated to learn more successfully from children's viewpoints.

References

- Bruffee, K.A. (1999) *Collaborative Learning*, 2nd ed., The Johns Hopkins University Press, Baltimore.
- Chambers, R. (1994) The origins and practice of participatory rural appraisal. *World Development*, **20**, 953-969.
- Fukaya, M. (1998) Psychological shutdown of junior-high school students; *Monograph of the world of Japanese junior-high students* No. 59, Benesse Corporation, Educational Research Center, Tokyo.
- Okuhara, T. (1995) Changing relationship between parents and children. In: *The NHK Monthly Report on Broadcast Research*, **95**(2), 12-19. (in Japanese)
- Tokyo Metropolitan Educational Institute (1999) Unstable mind of children and school (Publication No.10kk-3), TMEI office of special research, Tokyo. (in Japanese)
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