From the Laboratory to the Kitchen: The Oral History of Nutrition and its Application to the History of Science

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Abstract

Eiyō-gaku, the science of nutrition, was first developed in early twentieth-century Japan through the endeavors of a scientist, Saiki Tadasu. Previous studies on the modern Japanese family have found that the new nutritional knowledge of the time, which was "rational" and "scientific," was transmitted to the housewives of the new middle class via the rise of the publishing industry. This paper aims to present the way in which the mothers of the new middle class in the early twentieth century applied the knowledge of nutrition in their everyday lives via retrospective interviews with their daughters. The article also considers the applicability of oral history to the history of science, by reviewing its methodological problems.

Key words: nutritional science, new middle class, early twentieth century Japan, oral history, the history of science

1. Introduction

> "Over the past sixty years oral history has transformed the practice of contemporary history in many countries."[1]

Traditionally, oral historical data have been considered less reliable than written documents as historical sources. According to Gwyn Prins,

> "Under the Rankean hierarchy of data, when official, written sources are available, they are to be preferred. Where they are not, one has to put up with second best, filling one's bucket further away from the pure source of official text. Oral data are, in these terms, without doubt, second best or worse, so their role is to facilitate second-best histories about communities with poor sources."[2]

However, in Western countries, especially in Britain, oral history has firmly established its

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[1] "Introduction to second edition" in Robert Perks and Alistair Thomson eds., *The Oral History Reader, Second Edition* (London: Routledge, 2006), p. ix.

[2] Gwyn Prins, "Oral History" in Peter Burke ed., *New Perspective on Historical Writing*, (Cambridge: Polity Press, 1991), p. 115.

position in historical studies. Paul Thompson, a British historian and sociologist, is the leading figure of this movement. Nevertheless, it should be emphasized that he has not insisted on the material superiority of oral historical sources over other documents such as newspapers, correspondence, and autobiography, but rather argues that historians should collect all different kinds of materials. This is an epigram for traditional historians who "feel much happier with a printed autobiography, just because it is printed, rather than something which is on tape."[3]

Oral historical methodology seems to have gained a certain recognition in the field of history, but it still seems to be a controversial method of historiography in Japan. To be more precise, compared to sociologists and anthropologists, the Japanese historians have not been very positive about using oral history and its use has been sidelined.[4] This paper aims to represent the mothers of the new middle class who were alive in the early twentieth century through their daughters, and to reveal how some of them practiced nutritional science at home; it also considers the applicability of oral history to the history of science.

One of the difficulties of applying the oral historical method to historical research is that oral history is only available from living people. This fact means that only modern or contemporary studies can utilize oral sources, while it is virtually impossible to obtain data for studies that deal with pre-modern periods. This is one reason why oral history has not been widely adopted by historians in the history of medicine or science.[5] However, even when oral sources are available, historical positivists have regarded oral history as unreliable, due to "distorted memory by physical deterioration and nostalgia in old age," "the personal bias of both interviewer and interviewee," and "the influence of collective and retrospective versions of the past."[6] Normally, the evidence of oral history is retrospective over a long time span, and some historians think that interviewing the elderly raises fundamental methodological issues. In this respect too, compared with other historical sources, oral history has advantages and drawbacks. As Paul Thompson argues, all materials are subject to bias, and each has varying strengths in different situations. In some contexts, he continues, oral evidence is the best; in others, it is supplementary, or complementary, to other sources.[7] Oral history can be of greater value, especially for fields for which little

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[3] Paul Thompson, "Problems of Method in Oral History," *Oral History*, Vol. 1, No. 4 (1972):1–47, p. 2.

[4] Sakai Junko points out there have been a political background to the rejection of oral history: it has been a very sensitive subject in the discussion between revisionists and positivists regarding the Japanese war crimes of World War II. When discussing the application of oral history to Japanese history in the late 1980s, the topic was memories of the war, and the reliability of oral sources was critically discussed. (Sakai Junko and Paul Thompson, "Horon [addendum]" in Paul Thompson, *Kioku kara rekishi e* [Japanese translated edition of *The Voice of the Past*], (Tokyo: Aoki Syoten, 2002, p. 556–7).

[5] On the other hand, in order to compile public history, especially in the fields of Japanese political history, such as the history of Meiji Restoration, oral evidence was collected from people who had something to do with political events (Ito Takashi, "Rekishi kenkyū to ōraru hisutori [Historical Studies and Oral History]" *Ohara Syakai Mondai Kenkyūjo Zasshi* [Journal of Ohara Institute for Social Research] No. 585, 2007: 1–10). It is considered that the target interviewees in political history were men who were capable of speaking publicly; silent and hidden women's voices were not considered suitable subjects.

[6] "Critical developments: introduction" in Robert Perks and Alistair Thomson eds., *The Oral History Reader, Second Edition*, (London: Routledge, 2006): 1–13, p. 3.

[7] Paul Thompson, *The Voice of the Past: Oral History Third Edition* (London: Oxford University Press, 2000), p. 153.

other evidence exists.[8] Table 1 shows the possible disadvantages and drawbacks of oral history as historical material: it shows that oral history is facing profound methodological challenges and that it has issues that must be carefully addressed. Still, oral history can offer important spoken testimonies—and some oral historians view these as oral history's strength rather than as a source of difficulties.[9]

Table 1. Advantages and Disadvantages of Oral Historical Data[10]

Values/Advantages	Points to be treated with care
Uniqueness, Subjectivity	Lack of representativeness
Contains detailed information about the informants and their social attributes	Biased data sampling Bias of social relationships being introduced through interviews
Represents living humanity that could provide significant and unique information	Forgetfulness, Omission, Misremembering, Boasting, Exaggeration, Expressing ideal opinion
Conveys the words and feelings of ordinary people, the individual or collective consciousness, attitudes, and feelings	Too much emphasis on the experiences of ordinary people, which could lead to the fragmentation and depoliticization of history
Much caution is exercised regarding bias in the oral sources compared to other historical sources such as newspapers	Distortion and suppression: oral history is shaped and reshaped by changing social structures and consciousness

2. Using Oral History for the History of Medicine and Science

In 2001, Liese Perrin argued for several areas of priority in the history of medicine in the UK, saying:

> "Given that twentieth century history of medicine is one of the programme's main priorities, oral history is an obvious focus. It is particularly important that historians capture the experiences of those involved in the many important and often rapid medical developments that took place in the first half of the twentieth century before that information is lost forever."[11]

It is true that, since the 1970s, the historical study of medicine using oral history has developed and accumulated, especially in the UK. The establishment of professional journals such as *Oral History* (1971-), *Oral History Forum* (1975-), and *The Oral History Review* (1973-) has definitely contributed to the promotion of oral history in the history

[8] Ibid, p. 154.

[9] For example, even the distortion and suppression of a life-history are not purely negative elements but they could be clues to the social pressures which informants bear on them (Thompson, 2000, p. 169). Also see the argument in "Critical developments: introduction" in *The Oral History Reader*, p. 3–4.

[10] This table is reorganized and made by the author following Paul Thompson (2000) and Alessandro Portelli, "What Makes Oral History Different" in Robert Perks and Alistair Thomson eds., *The Oral History Reader*, (London: Routledge, 2006): 32–42.

[11] Liese Perrin, "The Wellcome Trust and Oral History," *Oral History*, 29(1) (2001):106–109, p. 106.

of medicine. Several courses are offered to students for oral history skills acquisition and the Wellcome Library has started to compile a database of oral history. Oral history-based research has also been offered a subsidy from the Wellcome Trust.[12] On the other hand, although the Japan Oral History Association (the first such association in Japan) was founded in 2003 and issued the *Japan Oral History Review* (*Nihon Ôraru Hisutori Kenkyuu*), oral history-based research of medicine still remains uncommon in Japan.[13] In recent years, "the voice of patients" has been collected on a large scale by a Japanese NPO group, a branch office of DIPEx.[14] It is probable that rich oral testimonies preserved in such databases would influence the history of Japanese medicine in the near future.

When considering the application of oral history to the history of medicine, one can presume that there are two main perspectives: the oral history of the associated professions, and the oral history of lay people. The history of medicine, in particular, has employed the oral history of ordinary patients, including people who suffered from certain diseases and survived, because patients' views and personal testimonies can provide a different perspective from the history of medical knowledge, the history of medical system, and the history of prominent medical professionals. In other words, oral history can offer a history of medicine "from below." In fact, by scanning the literature that has appeared in oral historical journals as cited above, one can find that oral evidence has been collected from many sufferers of particular illnesses, such as Hansen's disease patients, former tuberculosis patients, and post-traumatic stress syndrome patients. Personal testimony can describe lay people's health beliefs, health practices, and attitudes toward illness, the stigma of disease, family life, and their experiences in hospital. Through this literature, we witness how "oral history can be used to change historical focus and open up new areas of inquiry."[15] Furthermore, oral history can shed light on people's experiences, such as women's experience of childbirth. However, attention should be paid to the fact that some of this literature emphasizes memory and storytelling, rather than the history of medicine itself.

On the other hand, how has the history of science utilized oral history? It seems that science studies have employed oral sources more frequently than has the history of medicine. For example, H. M. Collins conducted interviews with scientists in order to clarify the network within the scientific community.[16] Also, in his influential literature on the Public Understanding of Science, Bryan Wynne carried out over fifty interviews with a variety of involved people such as sheep farmers, government officials, scientists,

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[12] Ibid.

[13] As an exception, there has been quite extensive research on Hansen's disease (leprosy) patients in both the fields of history and sociology. In women's history, too, there has been some brilliant research based on oral history. For example, see Nishikawa Mugiko, *Aru kindai sanba no monogatari* [The Story of a Modern Midwife], (Kyoto: Midori no Yakata,1989).

[14] DIPEx (Database of Individual Patient Experiences) was founded in 2001 and has a database of personal and patient narratives of health and illness.

[15] Simon Guest, "Cure, Superstition, Infection and Reaction: Tuberculosis in Ireland, 1932–1957," *Oral History*, Vol. 32, No. 2 (2004): 63–72, p. 65.

[16] Harry Collins, *Changing Order: Replication and induction in scientific practice*, (London: Sage Publications, 1985).

spokesmen of a farming group, and the like.[17] The active use of oral sources in science studies—the sociology of scientific knowledge (SSK) or Science, Technology and Society (STS)—is partly due to the difference of the intended time span between these science studies and the history of science: the time span of the history of science is relatively longer.

Even so, like the history of Japanese medicine, the history of Japanese science does not seem to have developed an oral historical methodology. The main target for the history of science has been the so-called "high science," regarded as "pure science," which is based on laboratory work. Print media holds an important position as a chronicler of the history of this laboratory work. However, only focusing on high science could mean a potential loss of information concerning recipients' views: that is, how scientific knowledge or the science model has been accepted or practiced by ordinary people in reality. This paper tries to show how the scientific knowledge based on high science produced within a laboratory was received and practiced by lay people, especially by mothers of the middle class, using the case study of nutritional science in early twentieth-century Japan. In doing so, this article also considers how the history of science can utilize oral sources.

3. The Science of Nutrition in Early Twentieth-Century Japan

It was in Japan that the science of nutrition (eiyō-gaku), the branch of science that deals with nutrients and nutrition, especially in humans,[18] first gained independence from the natural sciences in the early twentieth century. The leading figure of this movement was Saiki Tadasu, M. D., Ph.D., born in 1876. Nutrition did not have independent academic units within universities in the country or overseas at the time, and had been dealt with on a piecemeal basis in various fields. For this reason, Saiki intended to create a base where nutrition was researched and developed completely and comprehensively.[19]

He began his career as a laboratory scientist in the Institute of Infectious Diseases, which Kitasato Shibasaburō had founded in Tokyo. In 1904, he discovered the enzyme diastase that converts starch and glycogen into sugars; this was considered a pioneering achievement because the enzyme was first extracted from a plant. After becoming a fellow at Yale University, Saiki studied physiology, medicinal chemistry, and toxicology, meaning that he put himself into a leading field at the time. In 1920, the foundation in Japan of the world's first national institute of nutrition by Saiki, named the "Imperial Government Institute for Nutrition," attracted global attention. At the request of the League of Nations, Saiki was dispatched by the Japanese government to several countries, including in Europe, North America, and South America, where he delivered academic lectures year-round in the latter part of the 1920s about Japanese nutrition studies and its applied research. His success and recognition outside Japan seemed to contribute to his gaining

[17] Brian Wynne, "Misunderstood misunderstandings: social identities and public uptake of science," *Public Understanding Science*, Vol. 1, No. 3 (1992): 281–304.

[18] Oxford Dictionary of English, Second edition. (Oxford University Press, 2002).

[19] Saiki Tadasu, *Eiyō-gaku to sono shinkyō* [Nutritional science and its Progress], (Tokyo: Meibun-do, 1932), p. 1–3.

domestic approval and support. Even so, the Japanese National Institute of Nutrition was always in danger of abolition due to financial instability. For this reason, Saiki's work was conducted with a sense of crisis.[20]

Though he had a successful career as a researcher, it was not common for scientists at the time to focus exclusively on nutrition studies. Saiki strongly desired that researchers and government officials should view nutrition studies as one of the pure sciences.

> "The aim of nutrition is firstly to understand what nutrition is from the standpoint of pure science. The second purpose is to investigate what condition is best for the biological body, and to study how bodies can be kept in this best possible condition. Practice activity is conducted on the basis of pure science and not the other way around. For example, given that there is a problem of nutrient deficiency, we will find and improve it by application and practice of nutrition; however, you should never fail to remember that pure science should be always considered basic."[21]

There were some reasons why Saiki needed to emphasize the scientific aspect of nutrition. Eating for nutritional intake was considered to be one of the simplest ways of maintaining life. Accordingly, quite a few scientists believed that nutrition was not an appropriate subject for scientific research. According to Saiki, because eating is a familiar and daily practice for all, cooking in public spheres such as factories had usually been given to, "a bad workman with no efficiency or productivity," while, in private spheres, cooking had been considered the domain of women or maids.[22] Owing to the public image of nutrition, Saiki was called a "Food Doctor" (kuimono hakase) in a sarcastic way, and he was relentlessly criticized as a disgrace to his doctorate.[23] Gaining public recognition for the "scientification of nutrition (eiyō no kagaku-ka)", and "improving efficiency of nutrition (eiyō no gōri-ka)" became the focus of Saiki's work.

> "It seems that the problems occurring in the kitchen in our country have been treated with common sense, or, negatively speaking, they have not been dealt with seriously and properly so far. We have to turn them into a scientific problem. This should be the first step of improving the efficiency [of nutrition]. The scientification [of nutritional problems] means that everything should be researched by experimental methods, and we should clarify their causes and effects of them. We will eventually discover the law of nature, and live in a manner consistent with this law. That's the new way of nutritive life (eiyō seikatsu)."[24]

Thus, experimental methods held a prominent position in Saiki's work. One of his

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[20] Saiki Yoshiko, *Eiyō-gakusha Saiki Tadasu den* [Biography of Saiki Tadasu], (Gendō-sha, 1986), p. 41. Taika-kai, *Naimushō-shi (vol. 3)*[The History of the Home Ministry], (Tokyo: Chihō Zaimu Kyōkai Publisher, 1971), p. 232.

[21] Saiki Yoshiko, ibid, p. 37.

[22] Saiki Tadasu, *Eiyō no gōrika* [Rationalization of Nutrition] (Nagoya: Aichi Hyōjun Seimai Fukyū Kisei Kai, 1930), pp. 2–3.

[23] Saiki Yoshiko, ibid, p. 39.

[24] Saiki Tadasu, *Eiyō no gōrika*, p. 3–4.

achievements based on laboratory work was the "fuchsin staining method." Saiki tried to promote "Shichibu-zuki Mai (七分搗米)"—rice milled to the seventh degree—as the standard milling level instead of using 100 percent polished rice or unpolished [brown] rice. By this time, it was recognized that the consumption of polished rice was a major factor in the high incidence of beriberi resulting from the lack of vitamin B_1,[25] and Saiki believed that brown rice was not suitable for people who were still undergoing physical development or who could not enjoy supplementary dishes.[26] As with the degree of milling ("seihaku-do" 精白度), the amount of polishing that the rice had undergone became an essential issue, as an indicator for the degree of milling became necessary. The fuchsin staining method was the solution: first, one stains the rice using a carbol fuchsin solution for one or two minutes, and then washes it with water. Next, one bleaches the rice with sulphuric acid, and finally washes it with water again. This staining method makes brown rice red, whereas polished rice remains unstained. In a similar way, one can use this method to distinguish every part of the portion that is polished.[27] Saiki declares confidently,

> "It is irrational and unscientific to observe the seihaku-do (degree of milling) visually as before or to determine it by the presence or absence of an embryo. Today, it is scientifically possible to determine the seihaku-do by using the new method. Thus, the study of nutrition is now in progress; this makes the problem of nutrition scientific, and shows the way to the solution."[28]

4. Middle-Class Mothers and the Science of Nutrition

Nutrition is, of course, the process of taking food into the body through everyday meals. Because of this, it was important for Saiki that ordinary people's long-term habits and common practices relating to cooking and eating were eliminated. A laboratory-based study offered a scientific guarantee for nutrition studies. However, Saiki also thought that these findings needed to be applied to actual lives. He said, "A house or nation's health, economy, and prosperity originate out of a kitchen."[29] If this was the case, who could be a key player in the kitchens of ordinary homes? The most likely subject was a middle-class mother.

The so-called "New Middle Class (shin tyūkan sō)" has been defined as the new social class of people who were born in the period between the Russo-Japanese War (1904–05) and the First World War. This class grew in size considerably after the Taisho era.[30] A

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[25] Alexander R. Bay, "Beriberi, Military Medicine, and Medical Authority in Prewar Japan," *Japan Review*, Vol. 20 (2008): 111–156.

[26] Saiki Tadasu, *Eiyō no gōrika*, p. 12.

[27] Saiki Tadasu, *Eiyō-gaku to sono shinkyō* (Tokyo: Meibun dō, 1932), pp. 35–36.

[28] Saiki Tadasu, ibid, p. 36.

[29] Saiki Tadasu, *Eiyō* [Nutrition] (Tokyo: Eiyō sha, 1942, first edition published 1926), p. 205.

[30] Koyama Shizuko, *Katei no seisei to josei no kokumin ka* [The Creation of Home and the Nationalization of women] (Tokyo: Keisō shobō, 1999), p. 37–38. Sato Yukiko, "Taishō-ki no shin tyūkan-sō ni okeru syufu no kyōiku ishiki to seikatsu kōdō [The Education Consciousness toward the Child and the Living Behavior of the Housewife in the New Middle Class in the Taisho Era]*Nihon Kaseigaku Zasshi*, Vol. 55, No. 6 (2004): 479–492, p. 479.

characteristic of the new middle class was the division of labor by gender. A middle-class family was composed of a father who was a salaried employee of a government office, bank, firm, or school, and a mother who was typically a housewife, concentrating on the education of her children as well as on domestic chores. This meant that the father's occupation was attained by an academic record through the modern education system, due to lacking means of production through any family business. This class embodied the development of the academic values of the time. Typically, they lived in suburban residential areas newly developed in urban districts, and the father took the train to work; this was a brand-new lifestyle at the time.[31]

Although they were in the minority in prewar Japan—the ratio of the new middle class to the total number of workers in 1930 was apparently only 6.7 percent[32]—the mothers of the new middle class were important for the implementation of the new "rational" manner in the kitchen, because Japanese family studies has categorized the middle class family as "an education-minded family (kyōiku kazoku)." The parents of an education-minded family tended to emphasize children's academic achievements at school, and it was the mother, in particular, who undertook the responsibility for educating and training her children. At the same time, the child was becoming the subject of meticulous attention from his/her mother at home. It can be said that, in the new middle class families, the child had a strong presence at home for the first time in Japanese family history. According to works on the modern Japanese family (kindai kazoku-ron), managing and protecting their children's health was one of the most important tasks for middle-class mothers.

How, then, did the modern family, who had moved from their hometown to urban areas and became a nuclear family, acquire this new knowledge of "rational" and "scientific" lifestyles? A handbook for women published in 1923 (*Taisho jū ni nen do fujin hōkan* 『大正十二年度婦人宝鑑』), which covered every aspect of a woman's life—from a loyal family to the postal service—shows how, instead of the oral tradition, print media such as newspapers, books, and magazines played a significant role in transmitting the new knowledge to middle class mothers in the early twentieth century. The handbook says:

> "A French proverb says 'when you get thirsty, you should bring a pear with you.' Nowadays a woman moving up in the world should have knowledge. Reading books is the fastest way to gain this knowledge."[33]

In this handbook, there is a chapter about nutrition: from its content, the author can be presumed to be Saiki. Regarding the nutritional quality of food, the article says:

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[31] Ochiai Emiko, *Nijū isseiki kazoku e* [To the Twenty-first Century Families] (Tokyo: Yūhikaku, 2008, first edition published 1994), p. 45.

[32] Using the national census, Kadowaki et al. estimate that the ratio of the new middle class to the total number of workers in 1920 was 4.01%, and 6.70% in 1930. In urban areas, especially in Tokyo, this proportion was increased to 13.51% by 1930. They define the kinds of occupations applicable to the new middle class family as professional work, technical work, administrative work, and public security work. (Nihon Research Sōgō Kenkyūjo, Seikatsu suijun no rekishiteki bunseki, [Historical Analysis on the standard of Living]Tokyo: Sōgō Kenkyū Kaihatsu Kikō, 1988, p. 219, 227–228).

[33] Ôsaka Mainichi Shinbun, *Taisho Jū ni nen do fujin hōkan* [Handbook for Women of 1923](Osaka: Ôsaka Mainichi Shinbun Sha, 1923), p. 20

> "We have to eat to live. In the old days, we chose food in accordance with customs or personal preferences. However, those days are now gone. Customs and personal preferences are not always without foundation; however, it is necessary to define the contents and quantity of an appropriate diet according to in-depth scientific research. Only by doing so does eating to live serve its purpose."[34]

Following the above statement, the article begins by introducing five basic elements—water, protein, fat, carbohydrates, and minerals. It also offers a table analyzing the nutritional value of food and average daily quantities, saying, "it is critically important to know the amount of five elements contained in each food." Next, the author explains what the notion of "calorie" means, and then the amounts and calories of standard foods, classified by occupation categories, are presented. Finally, the article offers information on vitamins. The readers could learn "the scientific facts," for example, that vitamins A and B have greater heat resistance than vitamin C, so that cooking might affect the nutritional value of vitamin C.[35]

However, it is not clear how many women kept such a handbook. Rather, it is reasonable to suppose that nutritional knowledge based on the newest laboratory science was transmitted through women's magazines, which were increasingly popular at the time. The spread of education produced women who had the ability to read newspapers and magazines, and girls' high schools in particular lead to an increase in the overall readership for women's magazines published from the late Meiji period onward.[36] It is the accepted view that the rapid growth of entertainment magazines was due to readership among new middle class families in urban areas; of these magazines, *Shufu-no-Tomo* (*Housewives' Friend* 『主婦之友』) had a large readership. This magazine, first published in 1917, was a practical magazine for housewives, and the issues in circulation reached over a million in 1934.[37] It was the most popular women's magazine in the early Showa era. The target readership of *Shufu-no-Tomo* was the lower-middle class housewife, and the founder of *Shufu-no-Tomo* intended to start a new indispensable magazine for those who were struggling to make ends meet with lower-middle incomes, providing quick practical knowledge on housework and child-rearing.[38]

It is highly probable that the new middle-class mothers obtained their information on the science of nutrition through popular women's magazines such as *Shufu-no-Tomo*, because the new "rational" and "scientific" knowledge on cooking could not be derived from the earlier generation. Still, there is another consideration; how middle class mothers interpreted the information and put it into practice. As Nagamine Shigetoshi points out, in spite of the accumulation of studies on modern Japanese magazines, not enough research on magazine readers has been carried out due to the shortage of historiographical materials. "The only evidence left behind now is the reader's voice which appeared in a reader's

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[34] Ibid, p. 414.

[35] Ibid. p. 415–7.

[36] Kimura Ryoko, *<Shufu> no Tanjō* [The Birth of Housewives] (Tokyo: Yoshikawa Kōbun Kan, 2010), p. 32.

[37] Kimura, ibid, p. 55.

[38] Ibid.

column."[39] It is true that earlier studies have often utilized the reader's column or reader's story in *Shufu-no-Tomo* in order to analyze readers' attitudes, that is, the recipients' view. However, Nagamine indicates the possible drawbacks of the analysis of reader's columns. According to him, contributions are generally very brief and fragmentary, and we sometimes cannot gain enough information about the particular social stratum, job, age and the like, of contributors. In addition, he argues, it is likely that the correspondence column is usually received wisdom as judged by editors, so that accepted contributions tend to be supportive of the magazines.[40] Considering these possible disadvantages, the true attitudes and practices of the middle-class housewives regarding the new modern lifestyle cannot be grasped through statistical data from social research conducted at that time such as reading surveys (dokusyo chōsa), which Nagamine applied to his analysis of the modern readership. Sato Yukiko, for example, clarifies the intention and evaluation of the housework of the new middle-class housewives of the latter Taisho era, using articles about readers' personal experiences that appeared in *Shufu-no-Tomo*. Sato, analyzing 12 cases, shows that the new middle-class housewives aimed at providing consolation or spiritual fulfillment (慰安) to their husbands and children through home-prepared cooking.[41] "It is not that the new middle-class housewives did not pay attention to nutrition and economic efficiency, but rather, they set great store on the value of the 'comfort' and 'pleasure' of eating."[42] Sato points out that, among other housework, the housewife's intentions to comfort her family were only applicable in the case of cooking, and presumes that new middle-class housewives considered a table filled with homemade dishes to be the symbol of a harmonious household.[43]

This supposition is interesting because it suggests the possibility that middle-class mothers considered family morality or the domestic atmosphere to be more important than nutritional affairs. This perspective coincides with the theory that a dining table (卓袱台) worked as a symbol of family ties in modern Japanese families.[44] However, to be exact, the data analyzed in Sato's thesis is not the reader's direct voice, but rather edited articles. This means that the article was written based on the assumption that a large number of people would read it, and the writer/contributor of the article assumed that her opinions were open to the public. Accordingly, it is possible that the articles expressed the desirable ideals of life, rather than the reality.

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[39] Nagamine Shigetoshi, *Zasshi to dokusha no kindai* [Magazines and its Readers in Modern Age] (Tokyo: Nihon Editor School Shuppan Bu, 1997), p .157.

[40] Ibid, p. 157.

[41] Sato Yukiko, "Zasshi 'shufu-no-tomo' ni miru Taisyo ki no shin tyūkan sō shufu ni okeru kaji rōdō kan" [The View of Household Work of the Housewife in the New Middle Class in the Taisho Era in the Magazine 'Shufu-no-Tomo'(sic)"], *Seikatsu Kagaku Kenkyū* [Journal of Social Sciences and Family Studies], Vol. 10 (2003): 47–61, p. 52–54. In the 12 case studies in this article, the breakdown of jobs for the husbands were a government official (two cases), a sailor (three cases), a soldier (one case), a company employee (three cases), and unknown (three cases).

[42] Ibid, p. 53.

[43] Ibid, p. 54.

[44] Sawayama Mikako, "Shufu to katei bunka" [Housewives and Family Culture], *Junsei Tanki Daigaku Kiyō* [Bulletin of Junsei Junior College], Vol. 24 (1995): 147–159.

5. The Voices of Daughters

To examine another source, we now go back to oral history. Housewives in the 1920s and 1930s were generally born in the Meiji era; therefore, the oral history of the middle-class mothers of the early twentieth century may work in theory, but not in practice in terms of oral data collection as time passes. For this reason, I suggest that the oral sources of their children could be another option. The oral sources narrated by children have methodological difficulties in common with oral history in general, as mentioned earlier in this paper. However, the distinctive character of the source is that the speaking subject—namely, the narrator—is a different person from the central player in oral history. Yet, the informant is not just a third person but a child who has been the recipient of careful attention from his/her mother; this means that the oral history of children somehow represents the recipients' views of domestic care and attention in an education-minded family. In this way, retrospective interviews with children can illustrate how the middle class child interpreted or felt their mother's housework and behaviors at the time, and can cast new light on unexplored areas of the daily life in new middle-class families. The fact that the topic of their mothers' household work often appears in the histories of childhood lives in new middle-class families mirrors the character of the new middle-class family, in which a close mother-child relationship was developed.[45]

I here present some oral historical sources collected from old women who came from new middle-class families. They all graduated from Tokyo Women's Higher Normal School (Tokyo Joshi Kotō Shihan Gakkō, 東京女子高等師範学校), one of the prestigious training schools for female teachers at the time. The fact that the majority of students of that school was from middle-class families of the 1930s strengthens the new middle-class family's characterization as an education-minded family.[46] The main topic of the interview was the "hygiene experiences" of informants in their childhood and adolescence, and a number of informants talked about the housework and child-raising activities of their mothers in the interviews.[47]

The first case is about a mother from the northeast region who was described as a "hygiene-obsessed mother" (eisei-ka, 衛生家) by her daughter. She always cleaned her house with a wet rag, which was immersed in Lysol or cationic soap, a disinfectant product. The daughter, Kazuko, recalled that when they dined out, her mother tended to leave side salads such as cabbage, saying they were "dirty."

—So, did your mother think a great deal more about hygiene rather than nutrition?

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[45] Hogetsu Rie, *Kindai nihon ni okeru eisei no tenkai to juyō* [Concepts of Hygiene in Modern Japan: Evolution and reception] (Tokyo: Tōshin-do, 2010), p. 201.

[46] Sasaki Keiko, *Senzen ki joshi kōtō kyōiku no ryōteki kakudai katei* [The Process of Quantitative Expansion of Women's Higher Education in Prewar Japan] (Tokyo: Tokoyo Daigaku Shuppan Kai, 2002), p. 82–3.

[47] I conducted interviews in 2003, 2006, and 2007 for my dissertation research. Some of the informants were selected at random using the alumni lists of Tokyo Women's Higher Normal School, the predecessor of the present Ochanomizu University, and the others were selected by snowball sampling. I prepared for an interview guide template, but gave priority to what the informants wished to tell, rather than what I wanted to hear at the interviews.

Table 2. Informant Data

Name (Pseudonym)	Year of birth	Birthplace	Further Information	Case No. in Hogetsu (2010)
Kazuko	1926	Tokyo	Born into the family of salaried employee of an insurance company. She has a younger sister. Her mother came from Fukushima, the northern part of mainland Japan.	OH7
Yoshiko	1925	Seoul (Keijō)	Born into the family of the head of an elementary school. Yoshiko's family had moved to the capital of Colonial Korea from Tokyo after the Great Kanto Earthquake in 1923, and came back to Tokyo in 1939. She has an elder sister and a younger sister.	OH6
Akiko	1926	Fukuoka	Born into the family of salaried employee of a chemical manufacturer. Akiko was born the first girl of five children. She grew up at a company residence in Fukuoka, a capital of Kyūshū island.	OH5
Teruko	1929	Ibaraki	Born into the family of a salaried employee. Teruko has one elder sister, two younger sisters, and one younger brother. She moved from Ibaraki located in the Kantō region to Tokyo as a primary school student when her father, who worked for a national railways company, was transferred.	OH4

> "Yes. She seemed to think nothing of nutrition. It was not until I was admitted into a course in domestic science in Tokyo Women's Higher Normal School that she started to mention nutrition repeatedly. I heard that when I was a child I was hospitalized due to beriberi. We used to eat polished rice, right? My mother didn't have nutritional knowledge. There was a group medical examination on beriberi at an elementary school, and my knee was hit then. I had some kind of checkup. I have a hole here in my leg, that's because I took an injection at Juntendō University Hospital. Apart from hygiene knowledge, my mother lacked knowledge about food nutrition. We should have had whole rice (haigamai), but she was ignorant about nutrition."[48]

Kazuko's family settled in the center of Tokyo, and her father worked for an insurance company. Kazuko and her younger sister had read girls' magazines, so it is reasonable to suppose that her mother also bought and read women's magazines. This case interestingly shows that Kazuko's mother had some scientific knowledge of hygiene, which, according to Kazuko, was gained through a doctor, who was a relative. However, her mother's concern was exclusively focused on hygiene or cleanliness, and she was less interested in the nutritional value of food. Both hygiene and nutritional science were born and developed in modern times, and the discourse related to these disciplines was diffused in the early twentieth century through a variety of channels. In the eyes of professionals like Saiki, the ideal was for middle-class mothers to follow both disciplines. Kazuko's case, however,

[48] Interview with OH 7; recorded by Hogetsu Rie, April 2006. Reprinted in Hogetsu, 2010, p. 212.

implies that there was a possibility of another hierarchy of scientific knowledge, which was selected by the recipient's personal perspectives or habits.

On the contrary, there is the case of a mother who positively changed her lifestyle with the help of nutritional knowledge. Yoshiko's family lived in colonial Korea (Keijō) in the 1920s and 1930s. Before Yoshiko was born, her parents had moved from Tokyo to Korea after the Great Kanto earthquake of 1923 because her father had received a post as a school principal there. According to Yoshiko, her father was from a farm family in Chiba Prefecture, but he had hated being part of the family business and became a teacher. Yoshiko describes her mother, with three daughters as, "an advanced woman like a nurse."

> *—Did your mother give as much attention to nutrition as she did to hygiene?*
> "Yes. In terms of nutrition, she told us, say, 'have oysters because they are full of glycogen.' She often mentioned nutritive components such as vitamin A, and asked us to eat up all dishes including vegetables, fish, and meat. Thanks to that, I don't have likes and dislikes. Since my father was a teacher, our family often received gifts from the local people. Korea was rich in fruit. My father didn't get paid much but received gifts in kind such as chicken, pheasant, and eel, which might have been a source of albumin supply for us. My mother used a whole chicken to made soup, for example. They were not Korean dishes but quite high-calorie Japanese dishes."[49]

Yoshiko's mother looked like the embodiment of an ideal new middle-class mother; she did all the housework and never wasted a minute. She was also enthusiastic about her children's education.

> "She seemed to acquire deep knowledge by herself. Homemade mustard plaster, salt water gargle, hand-washing with soap, et. cetera... She always kept our house clean and tidy. Although we lived in a cold area with freezing winters, she did the laundry on a daily basis. Now, when I think about it, it was pretty hard work to do the laundry for five family members. We didn't live in the present age where hot water is available whenever we turn on a faucet. We heated a bath with firewood at first, and then we used coal. There was an 'ondol,' a Korean-style heating system, in my house, and it needed firewood, so much time and energy was required to make it operate during the winter. My mother was devoted to the education of her children, with a policy that children should concentrate on studying. Actually I have no memories of helping my mother with the housework."

Yoshiko's mother always kept a watchful eye on her children, who she felt were surrounded by possible dangers. For example, whenever Yoshiko visited a friend's house, she was not allowed to eat anything without her mother's permission, because Yoshiko's mother was concerned about the possibility that the other child's mother might give something unsanitary or unhealthy to Yoshiko. From oral history, it seems that Yoshiko thinks far

[49] Interview with OH 6; recorded by Hogetsu Rie, April 2006.

more positively about her mother's practices than Kazuko does about hers. The portrait that emerges from Yoshiko's oral history is that of a mother who utilized her entire knowledge for housework. This shows the possibility that the latest nutritional science had reached Japanese society in colonial Korea, and some Japanese women put theory into action. It can be considered that, as the wife of an educator, Yoshiko's mother might have tried to become a role model for other Japanese-middle class mothers within Japanese society in colonial Korea.

Akiko, born in Fukuoka, Kyūshū, was from a family with parents and five children. Her father worked for a chemical company, part of the *zaibatsu*, which were large capitalist enterprises of pre-World War II Japan. She provided a story about a box lunch at school and daily dinner at home.

> "I was from Fukuoka, so a *bento* consists of mentai-ko [salted cod roe spiced with red pepper] and chikuwa [fish paste shaped into a tubular form and grilled]. There was no beef. We had beef, but only for sukiyaki [beef with vegetables in soy sauce]. We often had sukiyaki. I have four brothers and sisters, and the youngest sister was born after I entered high school. The difference in our age is 14 years! Until that time, I had just three siblings. I loved tyan-pon [a Chinese-style hot-pot originating in Nagasaki], and my brother loved curry and rice. My sister loved oyako-don [a bowl of rice topped with chicken and eggs]. So my mother alternately cooked them. My parents didn't care about my youngest brother and sister. My father was enthusiastic about his children's education expect for the two youngest children: my closest younger brother and sister and I were urged to study more, whereas my youngest brother and sister grew up freely and easily."
>
> "When our family lived in an employees' house in Fukuoka, we had 'okyūto (おきゅうと),' which is a kind of jelly made from species of seaweed, and was served with dried bonito topping, vinegar, and soy sauce. An itinerant seller, calling and advertising the name of okyūto, visited our house in the morning. My father loved it, and I thought it was all right too. Oysters harvested in Hiroshima were also available. An itinerant with a balance scale sold them by measure."[50]

It seems as if the first half of Akiko's story is like an episode from the life of a contemporary family: her mother prepared the children's favorite dishes on alternate days to meet their preferences. Compared with other informants' stories, her table was filled with luxury foods like beef and egg. Also, it is interesting that Akiko's mother purchased local products such as okyūto and mentaiko, and at the same time offered quite modern dishes such as curry and rice to her children. The modernization of food is a standardized process; however, this story tells us that the notion of "economical and rational as well as nutritious food" is not a monolithic one. Naturally enough, not only economic disparities among social classes, but also regional characteristics and dietary cultures have an effect on daily eating habits. The rise of salaried workers led to company transfers for the first time in modern Japan; middle-class mothers had to acquire the tactics needed to get along well,

[50] Interview with OH 5; recorded by Hogetsu Rie, April 2006.

mobilizing available resources wherever they were transferred. Prior studies of the modern Japanese family have revealed that most middle-class families faced an uphill struggle to make ends meet. Accordingly, it is more natural to assume that middle-class mothers employed multiple tactics, which were not limited to the standard nutritional model.

The last case example is about Teruko, whose father worked for a national railway company. Teruko's family had five children and lived in the northern Kanto region before being transferred to Tokyo. Teruko told a story about a lecture on nutrition held at a girl's high school right after the end of the Pacific War. It is not clear who was the speaker; however, from the fact that Saiki was invited to many schools, including a girl's high school, as a guest speaker from the prewar period onward, the speaker could have been Saiki himself.

> "When I went back to a girl's high school after the war ended, an enlightened principal held many lecture classes for us aside from regular schoolwork. Once, an authority on nutrition was invited to my school, and he delivered a lecture on nutrition. It is not true that I did not have any nutritional knowledge, because my mother often said to me, 'don't be picky for your health.' Since early elementary school years, I had been told this phrase many times both at school and at home. The reason why one should not be a picky eater was explained from the objective of good health. But at the lecture on nutrition, the lecturer properly and carefully explained everything, from the kind of nutrition to its role. That experience was really useful for me. After all, health is inextricably associated with food, don't you think so?"
>
> *—Did you understand the relationship between health and food before then?*
>
> "Well, maybe yes. But it was dim until I heard the lecture."
>
> *—So, you hadn't apprehended nutritional science in a systematic manner, right?*
>
> "Yeah, I think so. But nutritional science is not enough, because there are further problems before food can be eaten. Cooking methods, for example. I guess the school principal hoped our younger generation would get to know that kind of knowledge. But you know, in reality, leaving aside a meal at home, I used to buy two loaves of bread with heavy strawberry jam at a school store for lunch. Plus, a bottle of milk at best. No vegetables and no fruit. Eventually I had such a poor diet because of a food shortage at the time."[51]

This story shows the difference or the gap between scientific knowledge and home discipline. Of course, popular lectures are designed and modified according to the audience types. Nonetheless, a lecture tends to be more specific on a subject, whereas disciplines or knowledge gained at home tend to be more about principles of moral education such as, "don't be a picky eater or you won't grow up big and strong!" In other words, pure science was modified and received in the process of popularization. This case also shows

[51] Interview with OH04; recorded by Hogetsu Rie, November 2003.

the gap between acquiring scientific knowledge and adapting it to real life.[52] In contrast to Saiki's hope of applying nutritional knowledge to real life, the deficiency of food during and shortly after World War II, and the chaos that followed the war, made it difficult to give sufficient consideration to everyday meals.[53] As the war became worse and the empire faced a food crisis, many people seemed to have no time to think about nutrition.

6. Conclusion

Although the number of stories presented here is limited, these personal testimonies give us some insight into the relationship between nutritional science and the new middle-class families of early-mid twentieth-century Japan. The families of the people who have told their stories shared certain characteristics of the new middle class; that is having mothers who did not work outside the home and were enthusiastic about their children's education, as earlier studies on the modern Japanese family have indicated. However, it was not always the case that mothers practiced their housework and management of children according to authentic guidelines about nutritional science. Rather, it is natural to think that there were countless variations of practicing cooking and nutrition, and it can be seen as a kind of *bricolage,* the combination of "rational" scientific knowledge and diverse available resources. For example, at times mothers might have utilized indigenous knowledge that was embedded in localized customs passed down from preceding generations, and at other times they might have added new scientific knowledge gained from print media to their traditional ways, and created their own style, while mobilizing available resources.

This bricolage comes from the fact that nutritional science is closely connected with the quotidian practices of cooking and eating. Even though nutrition knowledge was offered to readers through women's magazines, it was the readers' choice to employ the information or not, and all choices were always left to the readers or the recipients of the new knowledge. In the government-led movements aiming to improve the quality of people's lives (seikatsu kaizen undō) which began in the Taishō era, many lectures and exhibitions were offered for housewives. These were intended to introduce scientific ideas to family lives, because people who adhered to "old and unscientific customs" were thought to be an obstacle for the civilized empire.[54] However, this kind of social education (shykai kyōiku) differed from school education for children. It was very rare for housewives either to be blamed or instructed further, even when they modified "rational and scientific" nutritional knowledge in their own way at home. Therefore, it is quite natural that there were some mothers, like Kazuko's mother, who gave their time and energy to hygiene, mobilizing specific knowledge, whereas there were other mothers, like Yoshiko's mother, who were prepared for both nutrition and hygiene.

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[52] I have argued this topic elsewhere from the standpoint of the embodiment of hygiene knowledge. See Hogetsu (2010).

[53] In his chief work published in 1926, Saiki had already carefully argued for a food policy in case of national emergency. (Saiki Tadasu, *Eiyō*, p. 218–9)

[54] Koyama Shizuko, *Katei no seisei to josei no kokumin ka* [The Creation of Home and the Nationalization of women](Tokyo: Keisō shobō, 1999), p. 96–105.

Also, nutritional science is directly connected with daily familiar practices, and this explains why nutritional practices were susceptible to social or political changes. It was a rice riot in 1918 that triggered worries about a national food problem and the state ultimately accepted the necessity of nutritional science in order to research how food could be both economical and nutritious.[55] The great depression in the first year of Shōwa and a crop failure in farming villages made apparent the problem of undernourished children.[56] As Saiki used the term "Food Politics" (「食政」), nutritional science, entering a new sphere from the limited scope of individuality and ordinariness, could solidify its position precisely because the government recognized that nutrition had an important implication for state policies. However, the war that started in 1931 had enough impact to move nutritional science into the realm of theory rather than practice: food shortages resulted in a large number of people suffering from chronic hunger and trying to get whatever food they could to eat, without regard for nutrition. It can be said that the state of the food shortage was more serious than the established ways of cooking and eating based on old tradition or habits, which Saiki and the government tried to reform. In short, nutritional science always maintained a delicate balance between the "ordinary" and "public" spheres.

Finally, let us consider the potential of the application of oral history to the history of science. Understandably, oral history can offer clues about the recipients' views or actual practices, but as Table 1 indicates, the small numbers of samples collected from informants might make it inappropriate to generalize about recipients' views in some cases. Also, historians must grapple with intricate problems pertaining to the relationship between the interviewer and the interviewee, and the influence which changing social and environmental structures could have on these stories. However, could oral history still provide valuable sources and new insight into the history of science? Following Sakai Junko, the answer depends on what we think of or how we treat "narrated history," which is different from "fact-questing history." The daughters reconstruct scenes of their childhood through their personal memories and create their own meanings for trivial everyday experiences, which rarely been recorded in the past. Oral history shows, as Sakai indicates, that "history reflects 'fact' in some ways," and its purpose is to carefully analyze the differences between "facts that are difficult to grasp" and "what is narrated," as well as the differences between multiple narrated stories.[57] There seems to be enough room for the history of science to actively use personal spoken testimonies.

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[55] Taika-kai, *Naimushō-shi (vol.3)*[The History of the Home Ministry], (Tokyo: Chihō Zaimu Kyōkai Publisher, 1971), p. 230.

[56] Saiki suggested that the government expand school meals as a measure of undernourished children (Nihon gakkō hoken kai, *Gakkō hoken hyakunen shi*[The Hundred History of Japanese School Health]Tokyo: Daiichi hōki shuppan, p. 224).

[57] Sakai Junko, "Watashi no 'oral histoy' taiken to nihon ni okeru 'ōraru hisutori' no hatten no kanōsei" [My Experience with Oral History and the Potential of Its Development in Japan] Shishiryō Habu Chiiki Bunka Kenkyū, Vol. 2 (2003): 22–30, p. 23.