

# “Science at the Bar” in Japan: What are Scientific Issues and How to Address such Issues

WATANABE Chihara\*

## I. Introduction: When Science Appears at the Bar

In 1995, Sheila Jasanoff, one of the leading researchers of studies of Science, Technology and Society (STS), published one of her most important works: “*SCIENCE AT THE BAR*.” In this book, she highlights the ways in which US courts influence the development of science, society and law, taking as examples tort cases of product liability and medical malpractice, judicial review of scientific regulations, cessation of medical treatment and use of assisted reproduction technology. While indicating problems courts face in handling scientific issues, Jasanoff also lauds them as indispensable in bridging the gap between law and science.

At the time Jasanoff’s book was published, expert testimony was frequently heard in product liability and medical malpractice lawsuits and in criminal trials in the United States. Experts who testified were often criticized as partisan, taking sides with one of the parties, and thereby filling the courts with “junk science” and distorting scientific truth. In 1993, in *Daubert v. Merrell Dow Pharms. Inc.*, 509U.S.579, the United States Supreme Court replaced the Frye test of “general acceptance in the particular field”<sup>1)</sup>, which had been the standard for the admissibility of scientific evidence since 1923, and empowered courts to play the role of “gatekeepers” and verify the relevance and reliability of scientific evidence and testimony before it is proffered to a jury.

In this case, a judge was requested to serve as a gatekeeper in assessing the “scientific validity” of evidence. Since the judgment made reference to theories of the philosophy of science, such as Popper’s principle of falsifiability, as an indicator of “scientific,” it aroused debates from various quarters regarding the relationship between law and science.

Japanese courts had not yet clearly recognized by the 1990s that they would need to directly address issues related to modern science and technology. The situation has changed dramatically over the more than 20 years since. In 1995, in the wake of a mercy

---

\* Professor, Faculty of Law, Ritsumeikan University.

1) *Frye v. United States*, Court of Appeals of District of Columbia, 1923. 54App.D.C.46, 293 Fed. 1013.

killing at a hospital, Yokohama District Court issued a standard for justifiable euthanasia.<sup>2)</sup> In 2007, the Supreme Court handed down a ruling under which a surrogate mother would be treated as the legal mother of the child, as courts had ruled in the past.<sup>3)</sup> Courts have been asked to formulate norms on issues of morality brought before them and they have done so in many cases. The increased number of medical malpractice lawsuits and the proliferation of nuclear power-related lawsuits in the wake of the nuclear accidents caused by the Great East Japan Earthquake in 2011 have imposed increasing pressure on courts to address issues involving science and technology. In addition, the development of DNA analysis seems likely to encourage the use of scientific evidence and enhance its importance. Thus, “science at the bar” is now recognized as one of Japan’s great contemporary challenges.

Japan can be said to lag 20 years behind the US in recognizing the importance of “science at the bar.” However, Japanese courts had already been successfully addressing the problems pointed out by Jasanoff, such as environmental pollution and adverse pharmaceutical side effects, as early as the 1960s. In comparison to the United States, in which the number of mass tort actions began increasing in the 1980s and the use of scientific evidence became a problem, it can be said that science was brought to court earlier in Japan.

Why, then, did this fail to lead to a recognition in Japan that science was a core issue in court cases? Section II below reviews the background in Japan, while Section III analyzes how scientific issues have been addressed at the bar. Section IV forecasts the potential of courts to function as forums for the discussion of these issues in this age of science and technology.

## II. Why was “Science at the Bar” not a focus in Japan?

### 1. Development of “contemporary litigation” and science

In the United States, seeing that disputes over science and technology were being brought to court more frequently, Kantrowitz advocated the concept of a “science court” in 1967 (Kantrowitz, 1967). This is also the same year in which the Niigata Minamata disease lawsuit was filed and litigation on the four big pollution diseases started in Japan. As cases of pollution and drug-induced damages were filed as tort actions, scientific knowledge was needed to prove causation and negligence. For example, the “Itai-Itai” disease case is said to be the first lawsuit in Japan in which a scientist gave testimony in order to prove the causation of the disease (Matsunami, 1998). The history of science lawsuits pro-

---

2) Tokai University Hospital Euthanasia Case, judgment of the Yokohama District Court, July 23, 1995, *Hanrei Jiho* No. 1530, p. 28.

3) Surrogate Mother Case, decision of the Second Petty Bench of the Supreme Court, March 23, 2007, *Minshu* Vol. 61, No. 2, p. 619.

gressed along with the development of these cases.

However, the argument that these kinds of cases should be categorized as “science lawsuits” and that the trial should be held based on scientific evidence did not advance greatly in Japan. The establishment of a “pollution court” was proposed which would have resembled a science court (Kikkawa, 1978), but it only focused on the advantages of efficient and uniform administration of justice by means of a court with exclusive jurisdiction over pollution cases, and did not aim to enhance the scientific expertise of courts.

One reason may be the way of understanding of epidemiology, which prevailed in the pollution lawsuits. In these lawsuits, the courts adopted an epidemiological causation theory, which required that a causal relationship be found between the pollution and the disease based on epidemiological research in order to provide relief to victims. Because of this, epidemiology came to be regarded not as a standard of proof based on scientific knowledge but rather as a legal doctrine intended to help victims by lowering the standard of burden of proof imposed on plaintiffs. At that time, pathological knowledge was recognized as capable of providing scientific proof. Defendants claimed that plaintiffs should prove the pathological causation between the pollution and diseases. However, it was thought that pathological analysis could work against helping victims. In the world of jurisprudence, it is still commonly held that the finding of a causal relationship based on epidemiology is a legal value judgment. Based on this understanding, Harada (1979) argues that in pollution lawsuits, the court, “refrained from involving itself in making scientific judgments,” and that the fact that, “these lawsuits were not science lawsuits in the true sense, because the court did not directly make judgments on scientific issues,” was the key to the success of the pollution lawsuits.<sup>4)</sup>

In addition, despite a fundamental belief in the existence of scientific truth, legal disputes involving scientific facts were viewed from a political perspective—as battles between scientists on the side of state power and scientists on the side of citizens. Thus, the scientific disputes raised in pollution lawsuits were not viewed as purely scientific issues. This likely engendered an atmosphere contrary to the development of a legal means of evaluating the scientific knowledge disputed in pollution lawsuits from a scientific perspective.

On the other hand, pollution lawsuits and drug lawsuits in Japan were characterized as one type of “contemporary litigation (*gendai-gata soshō*),” which opened the door to a new understanding of litigation proceedings. Fresh light was shed on the capacity of litigation

---

4) Harada (1979) further argues that when dealing with claims for injunctions to prevent the risk of damage and addressing scientific issues raised in administrative lawsuits, the court should follow the procedure to examine *ex post facto* the safety examination process followed by the experts. This argument is still widely accepted. Tsuda (2004) harshly condemns the courts’ reluctance to emphasize epidemiology and their lack of understanding of statistics underlying epidemiology.

to provide a forum, meaning that the filing of a lawsuit and the subsequent court proceedings provide parties with an opportunity to engage in an orderly debate on an equal footing, while raising questions in the wider society and stirring social debate. Lawsuits in this category have also given rise to arguments that the nature of litigation is to provide parties with a place to debate, and that this guarantee of due process is the substance of civil litigation<sup>5)</sup>. However, because these lawsuits were not regarded as science lawsuits, they did not at the time result in trials based on expert scientific knowledge of the scientific issues.

## 2. Judicial passivity and science

The Japanese judiciary has generally been described as more passive than the other branches of state power. This passivity results from the institutional frame that the legislative and executive branches are empowered to create norms, while the judiciary is empowered to review created norms *ex post facto*. Even premised on this fundamental mechanism, Japanese courts have been criticized for their passivity and conservativeness. It can even be said that courts have sought to avoid making judgments on political issues to the greatest possible extent.<sup>6)</sup>

Question may be raised as to the source and division of the institutional power to establish rules and regulations concerning science and technology. Fundamentally, the conventional view was that the legislative and executive branches should take the initiative in carrying out this task in light of both the institutional framework of the government and their resource advantages, including expertise. The judicial branch was only required to defer to the judgment of the other two branches.

Nuclear power-related lawsuits are a typical example. In the leading Supreme Court case concerning the Ikata Nuclear Power Plant in 1992,<sup>7)</sup> the court ruled that when examining the safety of the basic design of a reactor facility, it should, “focus on whether any part of the assessment conducted by the defendant administrative agency on the basis of the expert technical investigation, deliberation and determination of the Atomic Energy Commission or the Reactor Safety Examination Committee was unreasonable.” If it was then found, in light of then-current scientific and technological standards, that “errors or omissions that cannot be overlooked” were made during the assessment or deliberations and that “the defendant administrative agency is deemed to have relied on these factors” in making its determination, the administrative disposition granting permission to install the reactors should be considered illegal. If not, the expert technical assessment made by the

---

5) Generally referred to as the argument for the third wave of the guarantee of due process; see Inoue (1988).

6) For the creation and changes in this court culture, see Watanabe (2015a).

7) Judgment of the First Petty Bench of the Supreme Court, October 29, 1992, *Minshu* Vol. 46, No. 7, p. 1174.

administrative agency should be respected.

Nuclear power issues involve an aspect of discipline in the development and use of science and technology. At the same time, it is a political issue affecting national energy policy. The high level of technical expertise required to handle nuclear power-related issues could discourage courts from rendering consequential judgments. The traditional politically passive posture of Japanese courts inclines them to respect the administrative agency’s assessments. Accordingly, Japanese courts refrain from delving deeply into and making consequential rulings on scientific issues. As a result, they lack the courage to analyze cases from the “science at the bar” angle.

However, the recent Justice System Reform was aimed at shifting from a society protected by ex-ante regulations to a society focused on ex post facto relief, and demand that the judiciary act as an adequate check on the executive and the legislature. Partly because of this, the Supreme Court has in recent years shown a somewhat more positive attitude toward judicial review of the constitutionality of laws and regulations and to rendering judgments declaring laws and regulations unconstitutional. It has also more frequently found plaintiffs to have standing to sue in administrative litigation.

Until the accident at the Fukushima Daiichi Nuclear Power Plant in 2011, the nuclear power issue had been viewed as a partisan political battle between the pro-nuclear power (pro-establishment) group and the anti-nuclear power group. Nuclear plant safety had not been seriously considered as a subject of scientific study. In the wake of the accident, however, judicial decisions made in previous nuclear power-related lawsuits have been under renewed scrutiny. In the future, nuclear power-related lawsuits may be the main field of science and technology-related litigation, and will take center stage as “science at the bar” in Japan. The accumulating deliberations and decisions of Japanese courts in this field will be key to future public confidence in the courts as important forums for the discussion of science and technology.

### **III. Framing “Law and Science” at the Bar in Japan**

#### **1. Medical malpractice lawsuits: where law and science collide**

In Japan, medical malpractice lawsuits are considered to be typical examples of science lawsuits. This view originates in a Supreme Court judgment handed down in 1976 in a case of medical malpractice involving a medical procedure called lumbar puncture at the University of Tokyo Hospital. In this case, the Supreme Court held as follows.

The proof of causation required in litigation is not proof in the meaning used in the natural sciences, which allows no shadow of a doubt, but is rather proof of a high level of probability that the relationship wherein a specific event invited a specific consequence can be confirmed through a comprehensive examination of all evidence. A determination that causation has been fully proven requires only that an ordinarily

person would not doubt that the purported causal relationship exists<sup>8)</sup>.

In the end, the causal relationship found by the Court was not consistent with any of the court-appointed experts' opinions submitted to the court.<sup>9)</sup>

This holding has been widely accepted as good ruling among legal practitioners and scholars, and even today is referred to as a judicial precedent in every study on "law and science" or "science lawsuits" (e.g., Kamemoto, 2014; Kasai, 2014).

The dilemma in relation to expert scientific opinions is that judges seek expert opinions because they lack expert knowledge, but they need expertise to evaluate and select appropriate expert opinions to a certain extent on which to base their judgements. This is an inherent problem recognized in science lawsuits (Nakano, 1988) not only in Japan but in any other countries generally.

In the United States, the main question is what procedure to follow in science lawsuits, whereas in Japan, attention is directed primarily to the decisions made by judges. This difference may partly reflect the institutional characteristics of the Japanese justice system. As it does not have juries, the judicial culture in Japan places a great deal of emphasis on careful fact finding and the ability of professional judges to find the truth, which is coincident with general expectations of Japanese people to their courts.

However, treating medical malpractice lawsuits as typical examples of science lawsuits and applying the rules and requirements of these lawsuits to science lawsuits more generally has proven problematic. Although medicine is categorized as a field of the natural sciences, the decisions made by clinicians actually engaged in medical practice are called into question in medical malpractice lawsuits. Clinicians make their decisions based on their sense of value and are expected, because of their role, to assume responsibility for their decisions to a certain extent. However, in the world of natural science, it is not generally anticipated that scientists will be directly responsible for the impact of their researches and activities on society. Science was considered and is still likely to be considered purely a pursuit of scientific truth.<sup>10)</sup> Thus, medical decisions and scientific knowledge are considerably different in nature.<sup>11)</sup>

---

8) Second Petty Bench of the Supreme Court, October 29, 1976, *Minshu* vol29-9 1417.

9) Since the Supreme Court drew a conclusion that was not necessarily consistent with any of the submitted expert opinions, its judgment is often criticized as ridiculous in medical circles.

10) For this reason, a study of science, technology and society which attempts to recognize the presence in society of other fields of science and technology that have had less contact with society and explores an appropriate way of interaction between science, technology and society, has at last started to develop. On the other hand, medical sociology has already been established as an independent field of study to a certain extent. The study of science, technology and society and of medical sociology have some areas in common.

11) However, in reality, medical judgment and scientific knowledge are easily confused. In particular, concerns are often expressed about the possibility that scientists go beyond the bounds of science and make policy decisions. For example, Kageura (2012) criticizes the comments given by experts following the Great East Japan Earthquake, and presents provisional definitions of "experts" and "scientists"; ↗

However, it is still worthwhile to study medical malpractice lawsuits as models for science lawsuits for the following reasons.

First, the specialized nature of the scientific issues disputed in science lawsuits pose the same inescapable difficulties courts encounter in attempting to address the issues raised in medical malpractice lawsuits. Therefore, approaches to the handling of medical malpractice lawsuits may hint at how to handle science lawsuits in general, although the expert knowledge required differs depending on the type of lawsuit.<sup>12)</sup>

Second, medical malpractice lawsuits are undeniably actually assumed to be typical examples of science lawsuits. In particular, through the analysis of judicial precedents, including the Lumbar Puncture Malpractice Case, causation-in-fact in medical malpractice lawsuits, which was formerly treated as causation under the medical definition, is now defined in legal and normative terms. This appears intended to justify court judgments in medical malpractice lawsuits by emphasizing their legal nature, and may also be applicable to science lawsuits generally.

## 2. Future paradigm for specialized lawsuits

During the Justice System Reform carried out at the beginning of this century, medical malpractice was recognized as a specialized type of lawsuit and studied in detail. The term "specialized lawsuits" is an abbreviated version of "lawsuits requiring specialized knowledge," and was fully discussed for the first time by the Justice System Reform Council. Delays caused by the difficulty of obtaining expert cooperation in medical malpractice lawsuit proceedings were criticized as a serious problem. In addition to medical malpractice cases, other types of cases such as labor cases, building construction cases, and intellectual property cases were categorized as specialized lawsuits and measures were implemented relating to each types of case.

These measures can be roughly divided into two types. One is the introduction of new examination methods and special procedures for each type of case, thereby enhancing the expertise of courts. The creation of the Intellectual Property High Court and the labor tribunal system were measures of this type. In 2001, medical malpractice divisions were established at the Tokyo District Court and the Osaka District Court.

The second type of measure was enhancing the system used to obtain expert cooperation. In 2003, the Code of Civil Procedure was amended to improve the procedure for

---

↘ experts are those who know and scientists are those who do not know, and people who, upon encountering a new event, do not regard it as an "unexpected" event but incorporate it in the scope of scientific knowledge are called scientists.

12) It is necessary to pay attention to the scope of science lawsuits to which the approach employed in medical lawsuits can be applied, while always giving consideration to the characteristics of the relevant specialized field and the substance of the issue that is disputed in the lawsuit. Therefore, when experts are involved in litigation proceedings, it is also necessary to provide them with the knowledge on the context of the lawsuit.



obtaining opinions from court-appointed experts and to introduce technical advisors. With regard to medical malpractice lawsuits, the Medical Malpractice Lawsuit Committee was established in 2001 within the Supreme Court and a list of court-appointed experts was prepared.

Thus, initiatives have been taken to enhance the expertise of courts by establishing various procedures and divisions that reflect the unique features of specialized fields, and these initiatives have generally been favorably evaluated.

The labor tribunal system created to deal with individual labor disputes has been particularly successful.<sup>13)</sup> The Intellectual Property High Court was established to meet the need for specialized and expedited proceedings in intellectual property cases. Although some aspects of this new court are worthy of scrutiny, such as the decreasing number of intellectual property cases brought before it and the frequent reversal of its judgments by the Supreme Court,<sup>14)</sup> it has generally received a positive assessment.

In the first place, since the establishment of specialized divisions and the assignment of certain types of cases to such divisions were transitionally implemented according to the type of case, these measures were accepted with almost no resistance (Watanabe, 2012). Within a specialized division, a judge handles only the specific type of case for which the division was created for as long as they are assigned to it. However, as judges are transferred to other divisions at relatively short intervals, they are still expected to be generalists.

Procedural improvements in the specialized fields and specialization of divisions and judges within courts have become irreversible trends. The question now is how to position science lawsuits generally within these trends instead of resisting to the trends. Having said that, as the term “science” covers a broad range of topics, it would be unreasonable to empower a specific court or division with exclusive jurisdiction over lawsuits involving all “science,” except for medical malpractice litigation. Furthermore, even where judges possess some scientific background or knowledge, it is never enough, making expert knowledge from outside the court crucial.

---

13) While the labor tribunal system is often understood as an alternative dispute resolution system, it may be more appropriate to understand it as a new type of procedure specialized in the field of labor disputes that is included in the court system, because the case is supposed to be transferred from the tribunal to the court and professional judges who take part in the tribunal proceedings are expected to find a legal solution to the dispute. For the survey on users of the labor tribunal system, see Sato (2011).

14) Miyawaki (2015) points out that the Intellectual Property High Court adopts a highly predictable norm, while the Supreme Court adopts a norm based on comprehensive consideration, and such difference in the norms adopted resembles the difference seen between the CAFC and the Supreme Court of the United States; however, the converse phenomenon is also seen in Japan.



### 3. Appropriate involvement of experts in litigation

In Japan, the procedure of seeking opinions from court-appointed experts has been the primary way in which experts have become involved in litigation proceedings. A court appoints an authority in the relevant field as a fair and neutral expert, and the appointed expert independently prepares a written opinion and submits it to the court. Most court-appointed experts complete their duties by expressing their opinions in writing, but some are summoned to court to give oral testimony. The procedure for seeking written opinions from independent experts is based on the assumption that experts in a particular field should be capable of providing answers to any questions concerning the relevant field. Before the 2003 amendment to the Code of Civil Procedure, court-appointed experts had been treated in the same manner as ordinary witnesses and subjected to cross-examination by both parties. Probably due to the distress caused by this obligation, it had been difficult to find people who would be willing to serve as court-appointed experts.

To solve this problem, a new procedure has been introduced in which a court-appointed expert is first questioned by the judge and then by the parties. In addition, technical advisors<sup>15)</sup> are now appointed from whom judges can hear an explanation when necessary.

However, courts rarely have appointed experts in pollution lawsuits, drug lawsuits or nuclear power-related lawsuits. In these types of cases, experts are usually retained by the parties to give testimony. Where a dispute involves "science in action," it is not always possible to find an expert who can serve as a neutral and fair third party. The appointment of experts by courts is not very common even in medical malpractice lawsuits, in which expert opinions submitted by parties have been used relatively frequently. Experts are more often retained by the parties to submit opinions; parties are even recommended to solicit expert opinions in this way. The Japanese procedural rules stipulate that experts participate in proceedings as court-appointed experts and technical advisors. In reality, experts are more often retained by the parties and this tendency has intensified even after the Justice System Reform.

Experts rarely appear in court to state their opinions orally. They are far more likely to only submit written opinions to courts. Civil procedure is mainly conducted through the examination of documentary evidence in which medical articles submitted by the parties are admitted as important evidence.

On the other hand, no special Japanese procedural rules exist regarding the treatment of expert witnesses other than those appointed by a court or the treatment of written opinions and documents submitted by experts. The law leaves these matters to practice.

Thus, while in the United States, cross-examination of expert witnesses based on their conflicts of interest interferes with the objective of obtaining appropriate scientific knowl-

---

15) Articles 92-2 to 92-7 of the Code of Civil Procedure.

edge at the bar, it is not a direct problem in Japan. In fact, nothing restricts this under Japanese law.<sup>16)</sup>

Experts retained by the parties and the written opinions they submit may be referred to as “private experts (shi-kantei-nin)” and “private expert opinions (shi-kantei),” respectively. They are treated as almost equivalent to court-appointed experts or their opinions. Under Anglo-American law, these opinions fall within the category of opinion evidence and are basically inadmissible at the bar. On the other hand, under Japanese practice, these expert opinions are treated in almost the same manner as documentary evidence.<sup>17)</sup>

As illustrated above, it is only dimly found that the cross-examination of experts distorts the elucidation of scientific or medical truth. Furthermore, the accurate evaluation and use by judges of opinions and documents submitted by expert witnesses in the making of legal determinations is not thought to be problematic in Japan.

#### **4. Difference between legal judgments and scientific judgement**

The prevailing view regarding the evaluation of scientific expert opinions is that, “a court has to make a legal and normative judgment, instead of making a purely scientific judgment.” Therefore, it is sufficient for judges to, “use knowledge sufficient to enable them to understand an expert opinion and exercise common sense in comparing it with other documents or compare two expert opinions that present different conclusions, thereby finding a rule that is appropriate for the case” (Noda, 1988, p. 21). This view is basically positively accepted.<sup>18)</sup>

The biggest reason supporting this view is that evaluation of scientific expert opinions is not intended to be an evaluation of science itself, but rather a normative evaluation that will serve as the basis for a legal judgment. The normative nature of this evaluation is partly derived from the belief that judges make normative evaluations based on sound

---

16) Hondo (2010), a physical scientist who stood in court as an expert witness appointed by the party, vividly describes that the cross-examination procedure is not suited for an expert to speak “scientific truth.” The parties and judges force the expert to answer yes or no to their questions, ignoring that a scientific fact is valid only under certain conditions. If the expert tries to maintain a sincere attitude as a scientist, the expert has no choice but to refuse to answer, or give a conditional answer by clearly limiting the conditions under which the scientific fact in question is valid. Furthermore, the expert has to take the witness stand in the position of representing the community of science, while speaking to only laypersons in science such as attorneys at law and judges. This procedural structure often makes the expert step out of his/her own field and speak judgments containing his/her own personal sense of values and political or moral aspects as a scientific fact.

17) It is considered that admission of these expert opinions as evidence requires consent from the other party; however, in practice, they are generally treated as strong evidence (Kondo and Ishikawa, 2015; 49).

18) Nakamura, Takahashi, and Fukuda (2014; 229), Hori (2013), etc. For example, Nishioka (2008), after making reference to Noda’s statement, argues that “in order to find legal responsibility, it is not always necessary to elucidate the concrete and detailed mechanism.”

common sense rather than on expertise of a specific field.

The argument that the evaluation of causation-in-fact is a legal and normative judgment undeniably serves in some ways as an excuse for the fact that judges, who are medical laypersons, cannot be expected to make medical judgments. Given that a judge must determine causation on legal grounds, it simply follows that a judgment made by a judge is of a normative nature.

Another argument attempts to justify judges' judgments by emphasizing the belief that their nature as generalists causes them to comprehensively evaluate all evidence based on common sense. Japanese courts tend to place a great deal of emphasis on a judgment based on social consensus and common sense. This argument assumes the great stature of judges to be based on these tendencies.

In accordance with the principle of enabling free determination by judges, Japanese courts admit a wide range of evidence submitted by the parties. In addition, the high level of interest by the public in achieving justice results in a tendency by Japanese courts to urge parties to offer proof to find the truth, and even causes them to exercise their power to control proceedings paternalistically. This tendency is often justified by the notion that the public wants courts to do so.<sup>19)</sup>

In evaluating medical expert opinions, the Supreme Court's holding in the Lumbar Puncture Malpractice Case is often understood to lower the required level of proof below the scientific proof, "which allows no shadow of a doubt." However, this is inconsistent with the actual self-awareness of judges and public expectations for courts. Japanese courts are strongly inclined to find out the substantial truth, and they are supposed to, "consider scientific issues in line with the relevant science to the greatest possible extent" (Kasai, 2014, p. 150). In short, it is thought that courts should introduce appropriate scientific knowledge and that judges can and should evaluate it accurately.

However, in reality, neither medical nor scientific knowledge is independent and static outside of a court. Furthermore, the assumption that judges, who are scientific laypersons, are capable of evaluating scientific knowledge accurately is a fantasy. In science lawsuits, it is impossible to completely separate scientific or medical issues from other issues. New scientific knowledge centered on the legal issues is created at the bar. What Jasanoff pointed out in her book is the potential to create scientific knowledge. The key is how to create it, and the procedure for creation is necessarily an essential factor.

With regard to expert cooperation, courts should serve as forums for generating shared understandings of the conditions and extent to which it is appropriate for experts to provide their opinions at the bar. This cannot be done without relying on the tacit knowledge of experts. In order to reveal the tacit knowledge of experts and question it if necessary,<sup>20)</sup> it

---

19) Tsuchiya (2015; 14) and Chiba (2003), while pointing out this tendency, argue that it is important to encourage the parties to recognize their responsibility for offering proof through the adversary system.

20) At the same time, this may lead to questioning implicit knowledge that legal experts rely on. ↗

may be insufficient for judges to rely only on documentary information, such as medical papers. In addition, the process of enabling litigation proceedings to function as forums for the discussion of science and technology-related issues, it may be important to create a place at the bar where experts can more actively communicate with other experts or non-experts.

#### IV. Conclusion: Courts as Forums of Scientific Issues

As discussed above, courts in Japan have played a leading role from relatively early on in dealing with issues arising from the use of science and technology to give relief to victims, mainly in the field of tort law. However, concerning scientific and technological disciplines, courts have generally deferred to the determinations of the executive and legislative branches. Furthermore, a perception existed that relying on scientific knowledge might not be conducive to giving relief to victims. For these reasons, no argument directly questioning “science at the bar” has been generated.

On the other hand, studies have been undertaken in recent years to determine how courts should evaluate scientific evidence and the nature of expert participation in litigation, mainly in relation to medical malpractice lawsuits. As in the case of the United States, these studies involve the issue of the partisan nature of expert witnesses retained by the parties. However, in Japan, this issue was not given much emphasis. More attention was focused on how judges should introduce expert knowledge to reach appropriate judgments. The prevailing view is still that judges can reach appropriate judgments by exercising common sense and evaluating expert information submitted in writing.

However, as Jasanoff pointed out, courts are at present inevitably facing various issues relating to science and technology. Courts now serve as indispensable forums for setting out the course of disputes relating to science and technology and finding resolutions to them.<sup>21)</sup> It is necessary to earnestly explore optimal proceedings to achieve this.

To this end, it may be desirable to actively call experts to courts to reveal their tacit knowledge so that judges and parties can create a shared understanding while ascertaining a valid view in the relevant specialized field.

One possible model worth noting is the approach whereby more than one expert concurrently participates in the proceedings and join with the judges and the parties in creating

---

↘ Teshima argues: “if there is something that should be called “implicit knowledge” in fact finding, it may ultimately refer to the fact that legal practitioners have knowledge on the characteristics of civil litigation, knowledge on the difficulties and weak points in fact finding, and full knowledge on how to overcome them (by choosing appropriate procedures and using their accumulated experiences)” (Teshima, 2014; 126).

21) As represented by lawsuits claiming non-smokers’ rights and anti-nuclear power lawsuits, litigation has already been used as a means of carrying out social movements, and it has already been pointed out that these lawsuits can function as a forum for discussing these issues.

a shared understanding on the point at issue in the case. The medical malpractice division of the Tokyo District Court uses a procedure like expert conference ("conference kantei") in which three court-appointed experts state their opinions orally.<sup>22)</sup> This procedure has the advantage of enabling experts to participate relatively easily and enabling judges to gain a better understanding of what they need to know by directly questioning experts. However, as it is a heavy burden for the court to appoint three experts, this system is used only in very limited cases in Tokyo. Another possible approach is the "concurrent evidence" procedure employed in Australia using expert witnesses. In this procedure, before trial, experts retained by parties prepare a Joint Report incorporating a summary of the matters upon they agree and disagree at the joint conference. At trial, the expert witnesses are sworn together and sit together at the witness box and they give testimony concurrently to create an understanding with the judges and the parties. Furthermore, a hybrid of these two procedures has been proposed wherein one expert appointed by the court and two expert witnesses retained by the parties would be concurrently examined ("conference of evidence"; see Hirano, 2016). This is also worth noting as a type of procedure involving more than one expert stating opinions orally at the bar.

In these interrogatory procedures, more than one expert participates concurrently in a proceeding to provide opinions, in a cooperative rather than a confrontational manner, to confirm points with which they agree and with which they do not. The use of these procedures will enable the introduction of as much scientific expert knowledge as possible into proceedings involving the relevant specialized fields and will promote active communications at the bar in specialized cases.

As the main purpose of this paper is to review the meaning and nature of "science at the bar" to date, it cannot fully discuss these new procedures.<sup>23)</sup> However, as pointed out at the beginning of the paper, "science at the bar" is becoming a major factor in lawsuits concerning various issues, such as the morality of life, nuclear power, medical malpractice, environmental pollution, and adverse pharmaceutical side effects. Japanese courts should therefore recognize that creating norms concerning scientific and technological issues is now an important role for the judiciary and strive to develop litigation proceedings that can function as forums for scientific issues.

---

22) Concurrent evidence has already been explained by a Japanese practitioner and the similarity between this system and the expert conference system implemented at the medical malpractice division of the Tokyo District Court has been pointed out (Masuo, 2007). Due to this similarity, concurrent evidence is discussed with a nuance expressing that there is nothing that needs to be learned from the new type of procedure introduced in Australia. In addition, among legal practitioners and jurists who engage in joint studies, a mainstream opinion is that within the framework of the major theme of science and law, the initiative of introducing concurrent evidence is nothing more than a trivial procedural reform. However, the author of this paper considers that more emphasis should be placed on the significance and possibility of such initiative.

23) For this point, see Watanabe (2015b).

### References

- Chiba, Katsumi (2003), “Saiban ni okeru Shinjitsu no Hakken=Seigi no Jitsugen nitsuite”, 54-11 *Jiyu to Seigi* 25.
- Hirano, Tetsuro (2016) “Discussion between Experts and Lawyers in Court: Proposal of “Conference of Evidence” for Litigation Requiring Expertise in Japan”, *Ritsumeikan Law Review* 33, 13-30.
- Hori, Kiyoshi (2013), “Iryoushouniokeru Kantei-iken Shitekikantei-iken no Shouko Hyouka nitsuite”, 63-1 *Okayamadaigaku Hougakukai Zasshi* 170.
- Ichikawa, Masato, Okubo, Shiro, Saito, Hiroshi & Watanabe, Chihara (2015), *NIHONNO SAIKOSAIBAN-SHO*, Nihon-Hyoron Sha.
- Inoue, Harunori (1988), “Tetsuduki-hosho-no Daidanno Nami” in Shindo Koji ed. *TOKUBETSUKOGI MINJISOSHOUHOU*, Yuhikaku.
- Jasanoff, Sheila (1995), *SCIENCE AT THE BAR*, Harvard University Press.
- Kageura, Kyo (2012), “‘Senmonka’ to ‘Kagaku-sha’: Kagakuteki-chiken no Genkai wo Maeni” in Onai, Takayuki & Shirabe, Masashi ed. *KAGAKUSHANI YUDANETEHA IKENAIKOTO*, Iwanami Shoten, 45.
- Kamemoto, Hiroshi (2014), “Saiban to Kagaku no Kosaku”, Kamemoto Hiroshi ed., *IWANAMIKOZA GENDAIHO NO DOTAI 6: HO TO KAGAKU NO KOSAKU*, Iwanami Shoten.
- Kantrowitz, Althur (1967), “Proposal for an Institution for Scientific Judgement”, *156 Science*, New Series 763.
- Kasai, Masatoshi (2014), “Minji Saiban to Kagaku”, in Kamemoto Hiroshi ed., *IWANAMIKOZA GENDAIHO NO DOTAI 6: HO TO KAGAKU NO KOSAKU*, Iwanami Shoten.
- Kikkawa, Daijiro (1978), “Kogaitou Saibansho Secchi no Teisho”, 36-2 *Ho no Shihai* 2.
- Kondo, Masaaki & Ishikawa, Hiroaki (2015), “Tokyo Chiho Saibansho Iryou Shuchubu (Minji Dai14bu, Dai30bu, Dai43bu & Dai35bu) ni okeru Jiken Gaikyotou”, 67-7 *Hoso Jihou* 1833.
- Matsunami, Junichi (1998), *ARU HANTAJINMON*, Nihon Hyoron-sha.
- Masuo, Takashi (2007), “New South Wales Shu Saiko Saibansho oyobi Australia Rempo Saibansho ni okeru Senmonka Shogen Seido no Kaikaku”, 1252 *Hanrei Times* 98.
- Miyawaki, Masaharu (2015), “Chizai Kosai to Saikosai”, in Ichikawa, Masato, Okubo, Shiro, Saito, Hiroshi & Watanabe, Chihara (2015), *NIHONNO SAIKOSAIBANSHO*, Nihon-Hyoron Sha. 185.
- Nakamura, Tamiko (2014), “Fukakujitsuna Kagakuteki Jokyoka deno Saiban”, in Kamemoto, Hiroshi ed., *IWANAMIKOZA GENDAIHO NO DOTAI 6: HO TO KAGAKU NO KOSAKU*, Iwanami Shoten.
- Nakamura, Yasushi, Takahashi, Yuzuru & Fukuda, Takehisa ed. (2014), *SAISHIN SAIBAN JITSUMU TAIKEI 2 IRYO SOSHO*, Seirin Shoin.
- Nakano, Teiichiro (1988), “Kagaku Kantei no Hyoka” in Nakano Teiichiro ed., *KAGAKUSAIBAN TO KANTEI*, Kobundo, 27.
- Nishioka, Shigeyasu (2008), “Ijikankeisoshō niokeru Kanteitono Shokohyouka nitsuite” 1254 *Hanrei Times* 29.
- Noda, Hiroshi (1988), “Kantei wo Meguru Jitsumujou no 2, 3 no Mondai”, in Nakano Teiichiro ed., *KAGAKUSAIBAN TO KANTEI*, Kobundo, 1.
- Sato, Iwao (2011), “‘Rodoshinpanseido Riyoushachousa’ no Gaiyo”, 1435 *Jurist* 106.
- Teshima, Asami (2014), “Minjisaiban ni okeru Jijitsunintei no Kozo”, *Hotetsugaku Nenpo* 2013.

Tokyo District Court Medical Suits Committee, "Tokyo Chihosaibansho Iryoshutyubu niokeru Kantei no Jitsujo to Sono Kensho (1) (2)", 1963 Hanrei Jiho 3, 1964 *Hanrei Jiho* 3.

Tsuda, Toshihide (2004), *IGAKUSHA HA KOGAISAIBAN DE NANIWO SHITEKITANOKA*, Iwanami Shoten.

Tsuchiya, Fumiaki (2015), *MINJISAIBANKATEIRON*, Yuhikaku.

Watanabe, Chihara (2012), "Saiban no Senmonka to Saibankan", 339=340 *Ritsumeikan Hogaku* 647.

Watanabe, Chihara (2015a), "Heiseiki no Saiko Saibansho: Kawattakoto, Kawaranaikoto" in Ichikawa, Masato, Okubo, Shiro, Saito, Hiroshi & Watanabe, Chihara (2015), *NIHONNO SAIKOSAIBANSHO*, Nihon-Hyoron Sha.

Watanabe, Chihara (2015b), "Saiban to Kagaku: Forum toshiteno Saiban to Sono Tetsuduki no Akikata nituiteno Ichikosatsu" 1 *Ho to Shakai Kenkyu*.