

Electricity Matters, but Is Electricity Matter? :

Physicists and Jurists on Power Theft

in Early 20th Century Japan

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1. Introduction

The present Japanese Penal Code regards electricity as property in the sense that it may be considered as an object of theft (Article 245 “Electricity” in Chapter 36 “The Crimes of Theft and Robbery”: “In terms of the crimes in this chapter, electricity is regarded as property.”) Like many other articles in the Penal Code, this article concerning electricity appeared in 1907 for the first time and has remained basically unchanged since then. While the introduction of this article resulted from Japanese jurists’ efforts to cope with the new types of problems emerging in a society under rapid industrialization, it also shows that by the turn of the century, the old Penal Code that the Japanese Government had adopted in 1880 under the influences of the French, German, Belgian, and Italian criminal law could no longer properly deal with electricity as a commodity. Since the late 1880s, electric light companies had been selling electric power to local governments, schools, and individuals without serious legal problems. However, several incidents took place around 1900 that revealed the unstable legal status of their commodity.

The legal understanding of electricity became shaky in the 1890s, since the physical theory of electricity and matter was undergoing frequent changes then. Jurists in industrialized countries felt the need to decide whether they would follow the developments in scientific research and revise laws accordingly, or find some way to keep the unpredictable influences of scientific research away from legal reasoning. This was a rare historical event in which changes in scientific knowledge directly caused a commotion

in society without any substantial shift in technology. Like their counterparts in Europe and North America, the Japanese jurists and physicists, abiding by their own professional codes, struggled to avoid causing unnecessary confusion in their country's electric light industry. Their effort was, as I will argue in the following pages, essential in establishing the legal stability of the industry. By examining their discourses, I will also try to describe the degree of professional maturity that they had achieved by then, their endeavors to soften the shocks caused by apparently startling scientific discoveries, and a jurist's judgment of where he should give up following current scientific discourse.

2. Criminal Law and Electricity Theft

The use of electric light rapidly and widely increased in Japan after the First Sino-Japanese War (1894-1895). By 1902, for example, in a relatively small area around the City of Osaka, 10,300 customers were using more than 40,000 light bulbs.¹ The skills of handling electrical devices also spread fast among mechanics and other workers, and around 1900 some began using them to modify machines installed by electric light companies without acquiring their permission, and to set up electric lights not covered by contracts. Electricity theft thus began emerging as a social problem.

Electricity theft had already been a nuisance to the electrical utilities in other industrial countries. The issue they faced was that many western countries' penal codes in the late 19th century usually specified that the objects of theft should be matter (gases, liquids, or solids),² while the latest version of physical theory at that time described electricity as vibrations in the ether. The ether in modern physics was a "quasihypothetical, continuous, and all-pervading medium through which forces propagated with a finite speed."³ While physicists published various kinds of ether theory, including the one that described atoms as structures in the ether (e. g., vortex atomic theory), most of them agreed that electricity was a form of energy.⁴ Since the early 1880s, electric light companies in Europe and North America had been generating electric current by using their machines and sustaining their

business by selling it. However, the penal code in most countries, excepting that of the United Kingdom, had not been able to provide them with sufficient legal protection until the early 1890s.

Japanese jurists were aware of the events and debates in Europe and North America related to the jurisprudential understanding of electricity. In 1898, a short article appeared in the *Hogaku Kyokai Zasshi* (Journal of the Society of Jurisprudence), a periodical read and financially sustained by graduates from the College of Law housed at Tokyo Imperial University. It reported that the Supreme Court in Germany was reluctant to apply Article 242 (the crime of theft) of the German Penal Code to power theft, while the High Court in Munich judged it illegal on the grounds that generating electric currents by using machines for personal use should naturally create a special right of ownership.⁵ Though this article did not mention the Supreme Court's arguments, the next year a longer report of the German jurists' arguments was published in the same journal, detailing that one party argued that matter legally referred only to natural objects, while the other rebutted that what one could confine, move, collect, or induce could be understood as movable property.⁶

In this case in Germany, the District Court in Kiel judged that the crime of theft did not apply to electricity theft. While the High Court in Munich emphasized the importance of electricity in society and regarded power theft as illegal (1895), the Supreme Court in Leipzig supported the District Court (1896). At the Kiel Court, an expert witness testified that though natural scientists had not reached a decisive understanding of electricity, regarding it as fluid or liquid was simply not part of common knowledge.⁷ While a heated debate among the German jurists followed these judgments, the Supreme Court again presented the same understanding in 1899. Thus, the next year, the German legislators introduced a special law dealing with the crimes concerning electricity.⁸

As the German case shows, if the ambiguity of electricity's physical properties makes it impossible to apply criminal law to its theft, establishing an article or law that directly specifies it as a crime is a possible solution. What this entails is that jurists give up

determining whether electricity is matter or not. This happened in the United Kingdom in 1882, in the State of Colorado in 1893, and in the State of Massachusetts in 1895, while in France and other states in the United States, legal precedents in which electricity theft was judged illegal had accumulated by the end of the 20th century. The Japanese jurists had learned of these by 1901.⁹

3. The Electricity Theft in Yokohama and TANAKADATE Aikitsu's Testimony

In 1902, the Japanese court dealt with an electricity theft case for the first time. FUJIMURA Seijiro, a merchant selling electrical appliance in Onoecho, a district of the City of Yokohama, cooperated with an electrician named YOSHIDA Jirokichi to attach extra cords to the electric wires installed in his house by the Yokohama Kyodo Dento, Inc., which allowed him to light electric bulbs without informing the company. He did this to advertise his shop and to respond to the request of his neighbors who needed illumination for their exercise of *Gidayu* (a traditional style of Japanese reciting). Someone who saw the awkward installation of extra cords reported to the Yokohama Dento and the company's engineer once disconnected them, but Fujimura repeated the same offence.¹⁰

NODA Sukio, head of the Isezakicho Police Station, though knowing that the criminality of electricity theft was a controversial issue, thought that he could not overlook Fujimura's case when considering the social importance of the electric light industry. The Yokohama Dento submitted a statement concerning electricity theft in February 1902, to which the police responded by starting legal procedures for accusation. The Yokohama District Court finished the preliminary examination by the end of February and decided to put Fujimura and Yoshida on trial for misdemeanor.¹¹

During the trial at the Yokohama Court, the physicist and professor at Tokyo Imperial University TANAKADATE Aikitsu (1856-1952) submitted his testimony as a specialist of electricity.¹² His testimony consisted of replies to seven questions, in which two were directly related to the trial. One was the question of whether electricity was matter or

effect (or force), to which Tanakadate replied that the latest physical theory understood it as an effect of the ether. He added, however, that some theories postulated that atoms constituted the ether, while others the opposite, namely, that atoms were vortexes in the ether. The latter might consider electricity, which was a type of effect of the ether, to be a form of matter. He also wrote about an attempt to explain the characteristics of matter by electrical effects, not the other way around, and noted that whether or not electricity was matter depended on the definition of matter. Nevertheless, he concluded that electricity was not solids or fluids in the ordinary sense and was not matter if one defined it as that whose motion obeyed Newton's laws of motion.

Concerning the question of whether electricity had any value, Tanakadate could only stated that since some companies actually earned money by installing ammeters, electric currents generated and transmitted for the use of demanders had certain values. Tanakadate was, however, cautious enough to add that whether electricity itself or the effect of electricity had any value depended on the meaning of "value."

In view of the discovery of electrons by J. J. Thomson (1856-1940) in 1897, Tanakadate's testimony in 1902 appears somewhat strange in that he did not mention this particle with mass and charge. The Japanese physicists had been aware of the discovery of electrons by 1903, when NAGAOKA Hantaro (1865-1950) published his Saturnian atomic model in which electrons played a significant part. Tanakadate may have been too cautious to refer to the discovery made only five years before. Furthermore, the discovery of electrons neither denied the existence of the ether nor drastically changed the recognition of electricity as vibrations or a form of energy. Though the special theory of relativity published in 1905 led to the recognition that physicists no longer needed the ether as a medium of electromagnetic waves, many physicists and electrical engineers preferred to rely on the notion of the ether even after that.

The points of Tanakadate's testimony other than the disregard of electrons seem correct and fair. Since physics consists of questions concerning matter, he could only write that whether electricity was matter depended on the definition of matter, but at the same

time he invoked Newton's laws of motion as a commonsensical, standard definition. A recognition of the realities of the electric light industry also characterizes his testimony.

The discovery of electrons might be the only new event that could have made Tanakadate's testimony differ from the one given at the Kiel Court. Other than this, the testimonies of the Japanese and German experts were almost identical. However, the judgments in Japan were exactly contrary to the German ones: namely, the Yokohama Court judged it guilty (July 1902), the Tokyo High Court did not recognize its criminality (March 1903), and the Supreme Court supported Yokohama (May 1903).¹³ In the judgment of the Tokyo Court, Fujimura's title was a clerk at a lawyer's office, and the editor-in-chief of the *Horitsu Shimbun* (Jurisprudential Newspaper) TAKAGI Masutaro, who diligently reported the details of this electricity theft case, served as the defendant's attorney. The historian of science NAKAGAWA Toru thus infers that a group of jurists including Takagi may have deliberately set up this electricity theft case in order to point to the defects of the current criminal law.¹⁴ If this interpretation was correct, Takagi, who should have known of the judgments by the German Court, might have been bewildered by the Supreme Court's judgment.

Let us briefly examine the logic of the judgments.

The Yokohama Court recognized electric currents as the property of the company that generated them and maintained that the currents that as the testimony vaguely suggested would be consumed if bulbs were lit should be supplied only under proper contracts. The defendant's attorney invoked the testimony and asserted that electricity was an effect that one could not regard as "matter" so defined by the civil law or the Draft Penal Code. The judge, however, argued that since "movables owned by persons" could be objects of theft, the electric current generated artificially by a company could also be an object of theft, when considering its capacity to be accumulated, flown, and transferred. Though their conclusions were different, both the judge and the defendant's attorney referred to Tanakadate's testimony. Notably, the judge disregarded the definition in the civil code and separated "objects of theft" from "matter."

The Tokyo Court used the same testimony to draw a conclusion totally opposite to the Yokohama's. It adopted the Draft Penal Code's definition of "objects of theft," namely "corporeal movables belonging to others," and did not recognize electricity as fitting this definition, for Tanakadate had testified that electricity was an effect of the ether. The Tokyo Court thus judged that electricity theft could not be interpreted as a crime of theft. Criticizing the Yokohama Court's judgment, it pointed out that electricity could not be understood as an object of theft, possession, or ownership and added that no article in the current law specified electricity as an "object of any other right."

The Supreme Court paid no attention to the definition of matter in the Draft Penal Code or the Civil Code and stated that it defined objects of theft only by judging whether the concerned items fitted to the notion of theft. This definition sounds tautological, but the Supreme Court further detailed that the objects of thefts were what one could occupy, control, store, or transfer, and did not need to be corporeal movables. Electricity could be an object of theft, the Supreme Court determined, since it was considered as a physical object recognizable by the five senses and could therefore be an object of possession. Indeed, electricity was certainly an object of the sense of touch (*tangi possunt*) and could kill those who touched it. Some countries, as a German jurist once stated, had adopted it for the death penalty.¹⁵ The Supreme Court sentenced the defendant to six months major imprisonment and six months under supervision.

Many journals and magazines for jurists published articles on the Supreme Court's judgment of the first electricity theft case in Japan. The popular jurisprudential journal *Hogaku Shirin* described the Supreme Court's judgment "one of the great judgments in recent years."¹⁶ OKADA Asataro (1868-1936), professor at the Tokyo Imperial University College of Law, however, was skeptical of the Court's interpretation of the possession and transfer of electricity (that electricity could be an object of theft since it could be possessed and transferred), while he agreed that the Penal Code should specify the objects of theft according to the characteristics of the act of theft.¹⁷ He argued that what the Court regarded as the possession of electricity should be understood as that of a machine

generating electricity: Once electricity generated by one machine was transferred to another machine, it ceased to be identical. He went on to say that what the Court recognized as the transfer of electricity, therefore, was actually not transfer. Okada further warned that if the Supreme Court's judgment was correct, acts such as reading a book with a ray of light emitted from a neighbor's house, listening to the music coming from a stranger's recorder, and cooling a bottle of beer in the others' refrigerator could constitute acts of theft. The case of light, Okada added, was no joke since it was a kind of electromagnetic wave created by the same electromagnetic mechanism that governed the function of electric currents and light bulbs.

4. HOZUMI Nobushige's Arguments

Okada mentioned HOZUMI Nobushige's articles on the legal nature of electricity. Hozumi (1855-1926) was professor at the College of Law at Tokyo Imperial University and well-known as a specialist in civil law. Having noticed that the legal treatment of electricity had sparked debates in Europe, he gave a speech at the Hogaku Kyokai (Society of Jurisprudence) on electricity and law several months before the Yokohama case, which was later published in the Journal of the Society (*Hogaku Kyokai Zasshi*) as an article titled "Denki to Horitsu (1) (2)"¹⁸ (Electricity and Law). The next year he published another article titled "Denki to Horitsu (Mimpo)"¹⁹ (Electricity and Law (the Civil Law)) that dealt with the legal understanding of electricity in terms of the civil law.

Hozumi even surveyed the discussions in the United States and Italy, as well as those among the German population, and described the pros and cons of both matter theory (such as the Civil Law of Japan) and non-matter theory (such as the Munich High Court's judgment) of electricity. He argued that whether electricity was legally matter should be decided by law and judges, not by expert witnesses or jury. In his opinion, matter was not equivalent to the objects of ownership, possession, or any other rights, and therefore the notion of legal fiction (*fictio*) that allowed for convenience one to regard even ideological

phenomena as matters should be avoided in a modern society whose plurality of cultures might cause unexpected confusions. He naturally concluded that electricity, as a non-tangible object, could not be regarded as matter, and that only a part of “objects of right” were matter. Hozumi, however, admitted that since the current laws did not reflect such understanding, their revision would become necessary in the future.

Hozumi understood that the character of each country’s legal system would determine the legal nature of electricity. Since the Japanese Civil Law stipulated that matter should be tangible objects, Hozumi maintained that electricity was not matter and not subject to the rules applicable only to matter, though this did not exclude it from being classified as an “object of right.” In this discussion, Hozumi mentioned a physicist who insisted that electricity was not force but matter and clarified that he did not accept that statement. He seemed to have heard some physicists (supposedly not including Tanakadate) voice support for the matter theory of electricity, though whether this referred to the old fluid theory or the new-born electron theory was not clear.²⁰

After examining matter and non-matter theories of electricity, Hozumi proceeded to take up the relation between the Penal Code and electricity, namely, the questions of whether electricity theft was a crime and if so, whether it was a crime of theft, fraud, damage of property, or anything else. The guiding principle he relied on was “the prohibition of the application of analogy.”

Hozumi pointed to three reasons electricity theft could not be considered as a crime: that electricity was not matter according to the Penal Code; that electricity could not be stolen; and that the penal code could not be applied by analogy. Though he admitted that the most possible crime under which electricity theft could be classified was that of theft, he did not accept that it was a crime, for electricity was not matter and “occupying” electricity that was only a form of energy was a figure of speech. Hozumi was therefore critical of the Yokohama Court’s judgment. But he avoided commenting in-depth about the Tokyo High Court’s judgment, announced on March 20, 1903. It occurred a day before Hozumi completed his draft and thus he lacked the time to read its details.

Though denying the possibility of considering electricity theft as fraud or another crime, Hozumi praised the Germans' way of establishing a law specifying electricity theft as an independent crime (containing the articles corresponding to fraud and theft), unlike the preceding cases of the United Kingdom or the United States. After the German Court judged electricity theft not guilty, the Germans added a new law concerning electricity theft on April 9, 1900, which he understood as harmonizing "the progress of science" with "the demand of society".

In his discussion of electricity's nature in civil law, which was Hozumi's specialty, he first asked whether the contract of power supply was that of a sale, a lease, employment, work, or anything else. According to the Japanese Civil Law, electricity was not matter since it was not a tangible object, and therefore power supply could constitute neither a sale nor a lease. Furthermore, it could not be employment since it had no direct connection with humans or labor. Hozumi supported the understanding that the contract of power supply constituted work, though he recognized various objections to this understanding.

Whether the contract of power supply was that of work was a keen problem related to the House of Representatives Election Law that contained a provision denying the eligibility for election of those who were under contract of work with the Government. After the General Election in 1902, SAYAMA Sakutarō (1849-1915), President of the Tokyo Electric Light Company, who had been elected in the City Area of Yamanashi Prefecture, was sued by the runner-up, for the Light Company had a contract of light supply with the Tokyo Station of Post and Telegraph. The Tokyo High Court, consistently with its judgment in the electricity theft case, recognized the contract as that of work, not that of sale, and judged Sayama's election invalid. After Sayama appealed to the Supreme Court, the House of Representatives was resolved, and the court did not announce its judgment since the purpose of the suit disappeared. Meanwhile, in a similar suit in 1903, the Hakodate High Court judged a contract of light supply as not that of work. The fact that two courts at the same level presented exactly opposite judgments appeared problematic to many jurists.

5. Electron Theory and Hozumi's Hesitation

Most of Hozumi's articles that had not been contained in his books were posthumously published in *Hozumi Nobushige Ibunshu* (Collection of Writings by Hozumi Nobushige). "Denki to Horitsu (1) (2)" were included in Volume Two (1932) ((1) was renamed "Denki to Horitsu," and (2) "Denki to Keiho" (Electricity and the Criminal Law)). Both articles had undergone modifications since their first publication in the *Hogaku Kyokai Zasshi* in 1903, and "Denki to Horitsu (Mimpo)" that dealt with the civil law was never published again. Since *Ibunshu's* editor reflected Hozumi's own revisions by using drafts and offprints the author himself had corrected, all the changes of his articles after their first publication show the shifts in his understanding of the issue. The fact that "Denki to Horitsu (Mimpo)" was neither corrected nor included in *Ibunshu* also tells us something about Hozumi's attitude towards this article.

Electron theory that Hozumi encountered after he published his articles in *Hogaku Kyokai Zasshi* in 1903 forced him to change his understanding of the physical character of electricity. Hozumi added a comment to the article in *Ibunshu* that while preparing a draft, he had asked physicists, especially specialists in electricity, about its physical nature. Almost all of them, probably because "electron theory was not widely known then,"²¹ answered that electricity was not matter. Hozumi's articles were therefore based on the non-matter theory of electricity. However, he continued, as electron theory prevailed afterwards, electricity was gradually understood to be matter, which one physicist had actually mentioned before. Though he observed that matter theory, not non-matter theory, was more firmly supported by scientists, he believed that the basic standpoint of his articles would not have to change.

In "Denki to Horitsu (2)" as published in 1903, Hozumi mentioned Tanakadate as an expert he had consulted with, while in "Denki to Horitsu (1)" he referred to "a physicist" who insisted on the matter theory of electricity. In any case, immediately after publishing

his articles in the journal, Hozumi heard from Tanakadate or other physicists about the prevalence of electron theory and started to regard it as a firm ground for matter theory.

In Hozumi's understanding, if electricity consisted of electrons that had a mass and a charge, it could be legally understood as matter by the definition in the Civil Law. Then the contract of power supply could be classified as that of sale. All the discussion in his "Denki to Horitsu (Mimpo)" would thus appear unnecessary. This was probably the reason he did not bother to correct it for later publication. He could have treated his papers on the relations between electricity and the penal law in a similar way, since electricity could be an object of theft if it was matter, but he may have judged that his discussion of the legal definitions of matter and the objects of theft could be worth publishing independently. He may also have thought it important that an independent article about electricity theft should be added to the current Penal Code. Hozumi deleted and corrected the parts related to jurists' awkward attempts to interpret electricity as matter in a way not recognized by physicists, but his main standpoint remained the same as before in the revised version.

Though whether Hozumi had a chance to know it or not remains unclear, the existence of electrons does not have much to do with the question of whether electricity is matter. Before discovering electrons, J. J. Thomson suggested that the velocity of the cathode rays (which would later be identified as beams of electrons) was much smaller than that of light,²² which was almost equivalent to that of propagation of electric currents. Electricity remained to be a form of energy, not matter, even after the discovery of electrons. If Hozumi were patient enough to take time to understand electron theory thoroughly, he would have found that the discovery of electrons had nothing to do with his articles on electricity and law. However, perhaps too discouraged for further attempt, Hozumi seems to have stayed the course of maintaining the independence of jurisprudential judgment concerning what was matter and continued his effort to minimize the interference of scientific discourse with legal discussion.

6. The Revision of Penal Code in 1907 and Electricity Theft

Electricity was becoming an indispensable constituent of the industrializing society; however, scientific discourses concerning its physical character seemed to be taking courses incongruent with legally protecting its industrial use. If jurists could do nothing about the direction of scientific research, the only thing they could do to obtain the legal safety of the industry appeared to be revising the Penal Code so that the legal nature of electricity could be understood separately from ever changing scientific discourse. This was in fact what legislators did to deal with electricity theft.

The process of the revision of the so-called Old Penal Code started immediately after it was enforced in 1882. Though several drafts had been submitted since then, the Imperial Diet had not passed any of them until 1907, when the New Penal Code was promulgated. The entire revision took much longer than had initially been expected, because local bar associations, fearing the increasing tendency of suppressing human rights and opposing the secretive procedures, were strongly against the revision.²³ Thanks to this delay, however, the revision reflected the lesson of the electricity case in 1902-1903.

Hozumi diligently worked for the revision as a member of the Third Section of the Hoten Chosa Kai (the Investigation Committee of Codes) since 1899 and became in charge of drafting the reform proposal as the chairman of the Keiho Kaisei Kiso Iinkai (the Committee for the Draft of the Revised Penal Code) that the Ministry of Justice established in 1906.²⁴

The article concerning electricity theft appeared for the first time in the revision proposal submitted by the committee in 1906. Article 270 in Chapter 36 “The Crimes of Theft and Robbery” stated that “Concerning the crimes of this chapter, electricity is regarded as property.”²⁵ This article was discussed in the 27th General Assembly of the Horitsu Torishirabe Iinkai (the Investigation Committee of Laws, the successor of Hoten Chosa Kai) held on December 26, 1906 and was approved with no change. The explanation put to this article (then Article 246) for the discussion at the 23rd Imperial

Diet stated: “This article was newly added. It was commonly understood that electricity was not matter. To punish electricity theft it was necessary to add this article.”²⁶ The author of the draft adopted the non-matter theory of electricity and specify anew electricity as an object of theft. Since the New Penal Code was promulgated and enforced in 1907, this article has remained unchanged until now.

7. Concluding Remarks

Though trained mostly in the German tradition, the Japanese judges of the Supreme Court treated electricity theft in opposite to their German counterparts. They judged electricity theft as a crime, regardless of Tanakadate’s testimony concerning the physical nature of electricity. The judges seemed to prefer maintaining the stability of the electric light industry than applying full rigor in their interpretation of the law. However, university professors accustomed to the German practices did not fail to blame the judges and pointed to the necessity of adding a new article to the Penal Code. While the judgment of the Supreme Court could satisfactorily protect the industry, the revision of the Penal Code stabilized the legal status of electricity more firmly than before.

Notably, even the judges who regarded electricity as an object of theft did not insist on interpreting electricity as matter, though they might have known the German jurists’ attempts to do so. The Japanese judges and jurists all agreed that if they accepted the definition of matter in the Civil Law, they could not regard electricity as matter after Tanakadate’s testimony. The judges could modify the definition of the objects of theft, but not that of matter, and neither the judges nor the jurists dared to touch the definition of matter or neglect the physicist’s testimony. Science had by then become part of the basis for legal judgments. Without producing any concrete technological applications, it could thus cause certain confusions in society and industry. Though Hozumi advocated the independence of jurisprudential arguments concerning the legal definitions of matter and the objects of theft, this did not mean that he did not care about the implications of

scientific research.

Indeed, Hozumi was so watchful of the changes in physical theory that he reacted to electron theory too sensitively. While he probably misinterpreted the meaning of the discovery of electrons, he was faithful enough to continue hewing to physicists' definition of electricity. Though arguing for the independence of the legal judgment concerning electricity, Hozumi could not resist the temptation to refer to scientific pronouncements on the true nature of electricity. After learning of electron theory, the scholar Hozumi felt forced to correct several parts of his articles. Probably because of this supposedly bitter lesson, the jurist Hozumi recognized the necessity of adding to the Penal Code a new article concerning electricity theft more keenly than those who knew nothing about electrons.

The legal judgment may not, on the other hand, be as independent as Hozumi believed possible. When one deals with intangible concepts such as death and the body, one cannot arbitrarily give a legal definition to them independent of their social, scientific, medical, or cultural meaning. Therefore, the newly added article concerning electricity could only specify it as an object of theft; the revision of the Penal Code changed neither the definition of matter nor that of the objects of theft. While German jurists introduced the new notion of crime concerning electricity, their Japanese counterparts only modestly added electricity to the list of objects of theft. Nevertheless, this was probably the revision closest to the permissible limit for jurists who usually disliked exceptions. Electricity could be treated as an exception, since it was something untraditional and still unfamiliar to the public; no common social understanding of its nature had been established yet, though its rapidly increasing value to Japan's industrial output promoted the view that it needed a stable legal status. Science was the only area of knowledge that might affect the legal treatment of electricity. To protect electricity's growing industrial and social value, the legislators thus decided to minimize the influence of scientific research, which was even more remote from people's concerns. In this sense, the electricity theft case could also be considered as one of the earliest examples of the jurists' reaction to social problems caused

by ever-changing scientific knowledge.

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Endnotes

- 1 *Denki no Tomo* (Friends of Electricity), 136 (November 1902), p. 648.
- 2 In countries (including Japan) where the penal code had no clear definition of “matter,” jurists adopted in their discussion of the penal code the definition of matter in most civil codes, “gases, liquids, or solids,” or “corporeal movables.”
- 3 Helge Kragh, *Quantum Generations: A History of Physics in the Twentieth Century* (Princeton, New Jersey: Princeton University Press, 1999), p. 4.
- 4 A small number of physicists supported the older version of physical theory that explained electrical phenomena by using a notion of “electric fluid.” They could maintain that electricity was matter.
- 5 “Denki Toyo ni kansuru Hanketsurei (A judicial precedent over the theft of electricity),” *Hogaku Kyokai Zasshi*, 16 (1898), pp. 874-875.
- 6 “Doitsukoku ni okeru Denryu Toyo Jiken (Electricity Theft in Germany),” *Hogaku Kyokai Zasshi*, 17 (1899), pp. 61-66.
- 7 KAWAZOE Makoto, “Toden Koi to Ruisui Kinshi (The Theft of Electricity and the Prohibition of Application by Analogy),” *Akita Hogaku*, 50 (2009), pp. 53-66.
- 8 HOZUMI Nobushige, “Denki to Horitsu (Electricity and Law) (2),” *Hogaku Kyokai Zasshi*,

21 (1903), pp. 453-482, pp. 455-456.

9 “Denki Settou no Keiji Shobun (Criminal Penalties for Electricity Theft),” *Hogaku Kyokai Zasshi*, 19 (1901), pp. 66-67.

10 “Denki Settou no Hanketsu (The Judgment on Electricity Theft),” *Denki no Tomo*, 133 (August 1902), pp. 493-497.

11 “Denki Dorobo (Electricity Theft),” *Denki no Tomo*, 129 (April 1902), pp. 254-256.

12 “Denki Settou no Kantei (Testimony for Electricity Theft),” *Mainichi Shimbun*, June 25, 1902.

13 “Denki Settou no Hanketsu Yoshi (Summary of the Judgment of Electricity Theft),” *Horitsu Shimbun* (Jurisprudential Newspaper), 96 (July 21, 1902), pp. 114-115. “Denki Settou wa Muzai (Electricity Theft Judged not Guilty),” *Horitsu Shimbun*, 132 (March 30, 1903), pp. 243-245. “Denki Settou wa Yuzai (Electricity Theft Judged Guilty),” *Horitsu Shimbun*, 141 (June 1, 1903), pp. 527-529.

14 NAKAGAWA Toru, “Yokohama Toden Jiken Saiko (The Yokohama Electricity Theft Case Reconsidered),” *Denkigakkai Kenkyu Shiryo, Yuden-Zetsuen Zairyo, Denki Gijutsushi, Godo Kenkyukai*, DEI-93-52-62HEE-93-1-11, March 15, 1993, pp. 65-70.

15 HOZUMI Nobushige, “Denki to Horitsu (Electricity and Law) (2),” *Hogaku Kyokai Zasshi*, 21 (1903), pp. 453-482, p. 468.

16 “Denryu Settou Jiken no Daishin-in Hanketsu (The Supreme Court’s Judgment of Electricity Theft),” *Hogaku Shirin*, 44 (June 15, 1903), pp. 106-107.

17 OKADA Asataro, “Denryu Toyo Jiken no Hanrei wo Hyosu (Evaluating the Judgment of Electricity Theft),” *Hogaku Kyokai Zasshi*, 21 (1903), pp. 1008-1015.

18 HOZUMI Nobushige, “Denki to Horitsu (1) (2),” *Hogaku Kyokai Zasshi*, 21 (1903), pp.161-179, 453-482.

19 HOZUMI Nobushige, “Denki to Horitsu (Mimpo),” *Hogaku Kyokai Zasshi*, 22 (1904), pp. 153-168.

20 Hozumi, op. cit., n. 18 “Denki to Horitsu (1),” p. 178.

21 HOZUMI Shigeto, ed., *Hozumi Nobushige Ibunshu*, vol. 2 (Tokyo: Iwanami Shoten,

1932), pp. 541-542.

22 Kragh, op. cit., n. 3, *Quantum Generations*, p. 28.

23 YOSHII Tamio, *Kindai Nihon no Kokka Keisei to Ho (The Construction of State and Law in Modern Japan)* (Tokyo: Nihon Hyoron Sha, 1996), pp. 174-175.

24 Yoshii, op. cit., n. 23, *Kindai Nihon no Kokka Keisei to Ho*, p. 178.

25 UCHIDA Fumiaki, YAMABI Masanori, and YOSHII Tamio, eds., *Nihon Rippo Shiryo Zenshu*, vol 26, Keiho [1907] (6) (Tokyo: Shinzansha, 1995), p. 147.

26 Uchida et al., op. cit. n. 25, *Nihon Rippo Shiryo*, p. 363.