

Mining and revitalization of classical literatures on botanical science derived from Sorbonne libraries through collaboration between Université Paris Diderot and The University of Kitakyushu

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Key words

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Summary

This article describes the recent collaboration between Japanese and French teams aiming at the survey on the corpus of the history of botanical sciences in Paris, based on the literatures originated from the libraries of Université de Paris, one of the world oldest universities (well known as Sorbonne). Two teams attempted to fully re-collect and preserve the Sorbonne-derived botanical literatures at Université Paris Diderot through successive surveys in recent 2 years. As a result, many of classical books, doctoral theses and journals (dated between 1815-1970) were re-collected and registered as the open-access sources for future analyses.

1. Introduction

Recently, in collaboration with a group from the University of Kitakyushu and a group from Université Paris Diderot (Université de Paris 7), we started the literatural survey on the corpus of the history of sciences (especially that of botanical science) in France, based on the literatures originated from Université de Paris, one of the world oldest Universities (establishment in 1211 after authorization by Vatican), which has been well recognized as Sorbonne.

Since the history of the great Sorbonne was terminated (renewed) by rearrangement of the

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University of Paris into newly established 13 universities in 1970-1971, the science literatures aged for centuries were thus redistributed to the new universities. Université Paris Diderot is one of such post-Sorbonne universities in Paris. This was surely hard time for the science historical literatures, possibly the most remarkable distress to the integrity of the science history corpus from the Sorbonne libraries after the world war II. Recently, French universities are experiencing the second wave of distress to the scientific corpus due to drastic reforming of the universities and research institutions nationwide. For example, Université Paris Diderot, located in the Jussieu area, part of the Latin quarter (Cartier Latin, University area in the 5th arrondissement) is now moving to the newly developed university campus in the Tolbiac quarter (13th arrondissement). As a consequence, the integrity of the science corpus in the university libraries is likely endangered due to limitation of the space in the new libraries, and also due to the lack of funds enough to maintain the corpus.

In the present article, we report on the mining of the classical literatures derived from Sorbonne libraries at the closing old campus of the Université Paris Diderot (Jussieu campus). In addition, our current activity plans for revitalization of the corpus through collection, preservation, classification, digitalization, translation and re-evaluation of the classical science literatures from Sorbonne libraries by establishing the platforms both in Kitakyushu and Paris are discussed.

2. Roles played by the Sorbonne University in the History of Science

Natural philosophy of Aristotle was transposed into modern physics spending a long period of time as a result of continuous efforts in the medieval times, and University of Paris was surely the most glorious among the universities in Europe. I wonder why, Parisians are not proud of this fact? (Pierre Duhem, 1861-1916)

Pierre Duhem insisted that Université de Paris was the core of science development since the medieval times, by bearing number of excellent mathematicians and philosophers such as John Buridan, Nicole Oresme and Roger Bacon. Also in the following centuries, Paris kept producing a number of great scientists. During 18th and 19th centuries, there were great numbers of pioneering and world-leading scientists including physicists, chemists and biologists born and/or worked in France. Following names are listed as the least examples of

world-famous chemists and biologists with French academic backgrounds. World chemistry in the 18th and 19th centuries was lead by A. L. Lavoisier (1743-1794), J. H. Moissan (1852-1907), P. Sabatier (1854-1941), M. Curie (1867-1891), F. A. V. Grignard (1871-1935) and many other French chemists. Many of French biologists such as G.-L. de Buffon (1707-1788), J.-B. De Lamarck (1744-1829), A.-L. De Jussieu (1748-1836), F.-V. Raspail (1794-1878), G. Cuvier (1818-1832), J.-H. Fabre (1823-1915), L. Pasteur (1822-1895), C. L. A. Laveran (1845-1922), and A. Carrel (1873-1944) have drastically changed our concepts of living organisms (Kawano and Bouteau, 2007).

Table 1. Summary of the collaborative literature mining activities carried out in Paris.

Activity	Term	Topics	Personnel involved (institution)
1 st attempt	Mar. – May 2006	Survey of corpus available in Paris started. Collection of classical books discussed.	T. Kawano (UK), F. Bouteau (UPD), J-P. Rona (UPD)
2 nd study	Nov. – Dec. 2006	Some old books obtained. Collection of classical books discussed. In addition, survey of corpus in the market planned.	T. Kawano (UK), F. Bouteau (UPD), J-P. Rona (UPD)
3 rd study	May – Jun. 2007	Survey of literatures at the botanical department library (Jussieu campus) started. Books and theses (<i>ca.</i> 140 kg) were shipped to Kitakyushu, Japan for detailed analysis. A number of key literatures (of early 19 th century) were kept at the office of LEM, UPD for enabling the collaborative uses.	T. Kawano (UK), R. Errakhi (UPD), F. Bouteau (UPD), J-P. Rona (UPD)
4th study	July 2007	Survey of corpus continued at the Jussieu campus. Further collaborations between two teams agreed. Establishment of Centre Franco-Japonais d’Histoire des Sciences, discussed.	T. Kawano (UK), K. Yokawa (UK), F. Bouteau (UPD), J-P. Rona (UPD)
5th study	Nov. 2007 – Jan. 2008	Theses were re-collected and partially transferred to Kitakyushu, Japan (<i>ca.</i> 275 kg). Around 1 ton of literatures are kept in the office of LEM, UPD.	T. Kawano (UK), T. Hiramatsu (UK), F. Bouteau (UPD), J-P. Rona (UPD)

UK, University of Kitakyushu; UPD, Université Paris-Diderot. T. Kawano officially joined the works (1st, 2nd, 3rd and 4th) as a professeur invité (invited professor) at UPD.

Many of such pioneering works originally published in French language have been preserved as the key literatures of the libraries at Sorbonne. The original books, journals and doctoral theses which have been preserved in Sorbonne libraries may form the collections which surely deserve to be recognized as the heritage in the world science history.

3. Collaborative Literature Mining

We have initiated the collaborative works to re-collect and preserve the Sorbonne-derived science literatures especially those related to botanical science (plant biology) by examining the books and journals left in the closing library at the Jussieu campus of the Université Paris Diderot from April 2006, as T. Kawano from The University of Kitakyushu visited Paris as an invited professor at Université Paris Diderot. Collaborative survey ranged totally 5 times as T. Kawano (and his colleagues) visited and joined the team in Paris in recent 2 years. Table 1 summarizes the terms, topics and the personnel involved in each study. As the end, many of classical books were re-collected and registered as the components of Sorbonne collections to be maintained by our collaborative teams. Some examples of old books collected are listed in the Table 2. Among them, the series of books authored by de Lamarck and de Candolle (1815) were very precious and of great importance. Figure 1 shows the images of the book (1st volume). It is interesting to think of a fate of the book authored by Hermann Müller, originally published in Germany. This book was translated to English in London, and supplemented with the preface authored by Charles Darwin in 1883. This book somehow traveled from London to Paris 125 years ago, and lastly it came to Japan last year.



Fig. 1. Photographed images of the spine (left) and the title page (right) of « de Lamarck et de Candolle (1815) Flore Française, ou Descriptions succinctes de toutes les plantes qui croissent naturellement en France, Troisième Édition, Tome Premier- (Vol.1) ». The text of this book will be digitally scanned and will be open to public via CFJHS web page (<http://www.env.kitakyu-u.ac.jp/ja/cfjhs/>), as the first step for revitalization of the corpus.

Table 2. Examples of Sorbonne literatures re-collected from the Université Paris Diderot (Jussieu campus).

Year	Author (Editor)	Title and publisher
1815	de Lamarck et de Candolle	Flore Française, ou Descriptions succinctes de toutes les plantes qui croissent naturellement en France, Troisième Édition, Tome Premier-Cinquième (Vol. I-VI), Chez Desray, Libraire, Paris. (totally 6 volumes)
1826 1827	Bridel-Brideri, Sam El. A.	Bryologia universa seu systematica ad novam methodum dispositio, historica et descriptio omnium muscorum frondosorum hucusque cognitorum cum synonymia ex autoribus probatissimis. Volumen Primum- Secundum Lipsiae. (Two volumes)(<i>Kept in Paris</i>)
1834	Pauquy, Ch.	Statistique Botanique ou Flore du Département de la Somme et des Environs de Paris, J. B. Bailliére et Delloye, Paris. (<i>Kept in Paris</i>)
1837	Richard, D. M. P., ACH.	Nouveaux éléments de Botanique et de Physiologie Végétale, avec le Tableau Méthodique des Familles Naturelles, Société Typographique Belge. Ad. Wahlen et Compagnie. Londres. – Dulau et Comp, Libraires, Bruxelles. (<i>Kept in Paris</i>)
1849 1851	Müller, Carolo	Synopsis. Muscorum Frondosorum. Omnium hucusque cognitorum., (1) Pars Prima. Musci Vegetationis Acrocarpicae., Berolini, Sumptibus Alb. Forestner ; (2) Pars Secunda, Musci Vegetationis Pleurocarpicae., Berolini, Sumptibus Alb. Forestner. (Two volumes)(<i>Kept in Paris</i>)
1852	Germain, E., de Saint-Pierre	Guide du Botaniste ou Conseils Pratiques sur l'Étude de la Botanique, Victor Masson, Libraire-éditeur, Place de l'école-de-médecine, Paris. (<i>Kept in Paris</i>)
1864	Duval-Jouve, J.	Histoire Naturelle des Equisetum de France. J.B. Bailliére et Fils, Paris.
1878	Hartig, T.	Anatomie und Physiologie der Holzpflanzen. Verlag von Julius Springer, Berlin.
1883	Hermann Müller	Fertilisation of flowers. Macmillan and Co., London. (translated and edited by D'arcy W. Thompson ; <u>with a preface by Charles Darwin</u>)

Totally ca. 200 old books were re-collected from the botanical library of Université Paris Diderot (Jussieu Campus) and also from the local market, and partially transferred to the University of Kitakyushu for preservation, classification and re-evaluation through activity of CFJHS.

The collections we obtained include some early journals on botanical studies such as “*Bulletin de la Société Botanique de France (Paris)*” , from Vol. 1 (1854) to Vol. 23 (1876). These important Journals are kept in the office of Dr. F. Bouteau (Fig. 2, left), to allow re-evaluation

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processes through our programs.

The corpus we obtained was highly rich in doctoral theses in the field of botanical science. In Table 3, oldest portions of the thesis collection (totally exceeding 700 theses) are listed. Interestingly, the titles of theses told us that the topics studied in the recent 120 years are still common to the topics we are studying in the present time. Following brief sorting procedures in Paris (Fig. 2, right), some portions of the thesis collection were shipped to Kitakyushu to allow detailed analyses. Furthermore, we found some medical theses of 1850's (not shown in the list).

In addition to literature re-collecting activity, we could have deep discussion on how and where to preserve the bulky literatures after the library on the Jussieu campus was closed, and how to make use of these literatures for promotion and sharing of science historical understanding. Lastly we decided to transfer some portion of the classical literatures including books and doctoral theses to Kitakyushu to allow preservation and analysis by Japanese researchers. For this purpose, the platforms for such activity were proposed as follows.



Fig. 2. *Bulletin de la Société Botanique de France* (1854-1876) and doctoral theses obtained from the botanical library at Université Paris Diderot. (Left) Old journals kept in the office of Dr. F. Bouteau. (Right) Primary sorting of the classical theses re-collected.

Table 3. Examples of early doctoral theses re-collected from Sorbonne libraries.

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- (1) Jumelle, H. (1889) Recherches physiologiques sur le développement des plantes annuelles, Librairie Paul Klincksieck, Paris.
 - (2) Paul-Émile Citerne (1892) Berbéridées et érythrospérmées, Paul Dupont, Paris.
 - (3) Lothelier, M.A. (1893) 1^{er} Mémoire: Recherches anatomiques sur les épines et les aiguillons des plantes. 2^{me} Mémoire: Influence de l'état hygrométrique et de l'éclaircissement sur les Tiges et les Feuilles des plantes à piquants, Lille, Paris.
 - (4) Edmond Gain (1895) Recherches sur le rôle physiologique de l'eau dans la végétation, Masson & C^{ie}, Paris.
 - (5) Coupin, M. H. (1896) Recherches sur l'absorption et le rejet de l'eau par les graines, Masson et C^{ie}, Paris.
 - (6) Lutz, M.L. (1898) Recherches sur la nutrition des végétaux à l'aide de substances azotées de nature organique (amines, sels d'ammoniums composée et alcaloïdes), Masson et C^{ie}, Paris.
 - (7) Téodoresco, E.G. (1899) Influences des diverses radiations lumineuses sur la forme et la structure des plantes, Masson et C^{ie}, Paris.
 - (8) Jodin, H. (1903) Recherches anatomiques sur les borraginées, Masson et C^{ie}, Paris.
 - (9) Paul Becquerel (1907). Recherches sur la vie latente des graines, Masson & C^{ie}, Paris.
 - (10) Raoul Combes (1907) Recherches sur la vie latente des graines, Masson & C^{ie}, Paris.
 - (11) Parhon, M. (1909) Sur les échanges nutritifs chez les abeilles pendant quatre saisons, Masson et C^{ie}, Paris.
 - (12) Raoul Combes (1910) Détermination des intensités lumineuses optimales, pour les végétaux, aux divers stades du développement, Masson & C^{ie}, Paris.
 - (13) Pierre Chouard (1930) Types de développement de l'appareil végétatif chez les Scillées, Masson & C^{ie}, Paris.
 - (14) Georgette Levy (1931) La présence, la répartition et le rôle de l'aluminium chez les végétaux (*a*), Paris.
 - (15) Raoul, Y. (1936) Contribution à l'étude biochimique de l'hordénine, Imprimeries Oberthur, Rennes, France.
 - (16) Jean Feldmann (1937) 1^{re} These: Recherches sur la végétation marine de la Méditerranée. La Côte des Albères; 2^e These: Les Cyanophycées, Chlorophycées et Phéophycées de la Côte des Albères, Imprimerie Wolf, Rouen.
- (Table 2. continued)
- (17) Madeleine Fourcroy (1937) Influence de divers traumatismes sur la structure des organes végétaux à évolution vasculaire complète, Masson & Cie, Paris.
 - (18) René J. L. Moineau (1939) L'aile battante (*a*), Office Français du Livre, Paris.
 - (19) André Tercinet (1940) Action de l'hyposulfite double d'argent et de sodium sur quelques alcaloïdes (*a*), Société Anonyme de L'Imprimerie A. Rey, Lyon.
 - (20) Chaouki Adra (1940) Étude sérologique et chimique de certains composés arsenicaux envisagés comme antigènes (*a*), Librairie E. Le François, Paris.
 - (21) Georges Antoine (1940) Contribution à l'étude de certaines formes de la silice dans les tissus animaux sérologique et chimique de certains composés arsenicaux envisagés comme antigènes, Jouve & C^{ie}, Paris.

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- (22) Henri Berrier (1940) Contribution à l'étude de substances du type auxinique dans le r.ègne animal, Editions du Bulletin Biologique de la France et de la Belgique, Paris.
- (23) J. Ségala (1940) Le Mécanisme de la vision en lumière intermittente (*a*), Presses Universitaires de France, Paris.
- (24) Lida Levina (1940) Relation entre osmose et inhibition étudiée sur des tissus végétaux, Lons-Le-Saunier, Paris.
- (25) Marguerite Lwoff (1940) Recherches sur le pouvoir de synthèse de flagellés trypanosomides, Masson & C^{ie}, Paris.
- (26) Milios Jean (1940) Contribution à l'étude des laines de la Grèce (*b*), Amédée Legrand, Paris.
- (27) Paul-Alphonse Ardouin (1940). Contribution à l'étude de la chain des osselets de l'ouïe chez les mammifères placentaires, Imprimeries Delmas, Bordeaux.
- (28) René Moricard (1940) Facteur hormonaux et cytoplasmiques de la division nucléaire. Méiose et gonadotrophines, Laboratoire D'Évolution des Êtres Organisés, Paris.
- (29) Georges Bouvraïn (1941) Recherches contogéniques sue les Angiospermes dicotylédones, Imprimerie R. Foulon, Paris.

Totally ca. 700 theses were re-collected from the botanical library of Université Paris Diderot (Jussieu Campus), and transferred to the University of Kitakyushu for preservation, classification and re-evaluation through activity of CFJHS. (*a*) pour obtenir le titre de docteur l'Université. (*b*) pour obtenir le titre d'ingénieur-Docteur. Unless explained, they are all « Thèses présentées à la faculté des sciences de l'Université de Paris pour obtenir le grade de docteur ès sciences naturelles ».

4. Centre Franco-Japonais d'Histoire des Sciences (CFJHS)

In Kitakyushu, activities on behalf of Centre Franco-Japonais d'Histoire des Science (CFJHS, application for non-profit organization will be ready early this year), such as opening of the web site, launching of a new online journal "Bulletin du Centre Franco-Japonais d'Histoire des Sciences (Kitakyushu-Paris)" (ISSN: 1882-3548), and exchange of information among the active members were initiated in 2007 (Kawano and Bouteau, 2007). In Paris, similar activities (such as opening of the web site) were initiated by the team of F. Bouteau in 2008.

Our recently launched projects including the planned establishment of CFJHS in Kitakyushu, Japan, are simply aiming at preservation, classification, digitalization, translation and re-evaluation of the classical biological literatures from Sorbonne-related libraries, by making uses of the collections kept in both Japan (Kitakyushu) and France (Paris). Further re-collections of key original literatures related to science history (from other sources) might be included in our future activities. Since two scholars leading the current projects (F. Bouteau and T. Kawano) have biological background, our projects likely handle the botanical or biological science heritages. However, some other topics related to chemistry and physics will

be also covered with assistance from our collaborators.

5. Conclusion

Here, we described our activity for saving the historical corpus in the botanical science in France, by re-collecting the literatures originated from the Sorbonne libraries. Two teams from Paris and Kitakyushu attempted to re-collect and preserve the available but endangered literatures through 2 years of collaboration. Lastly, many classical books, doctoral theses and journals (dating back to 1800s and 1900s) were re-collected and registered as the open-access sources for future studies.

References

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