
DIE BRÜCKE

A German contemporary of the Institut International de Bibliographie

Markus KRAJEWSKI¹

Associate Professor of Media History, Bauhaus-Universität Weimar

▪ Au cours du 19^e siècle, l'utilisation permanente, et non plus occasionnelle, de fiches d'indexation pour le catalogue de grandes collections de livres s'est répandue dans les bibliothèques européennes avant de traverser l'océan Atlantique pour atteindre le nouveau monde. Cet article est consacré aux effets de cette technique de stockage (de l'information) lorsque les institutions se sont emparés de la connaissance de la méthode et de ses promesses (et surtout celle de standardisation universelle) pour imposer le catalogue sur fiches comme base indispensable de leur propre travail. Le cas précis de "Die Brücke" ("Le Pont") est examiné : ce comité allemand, ne se référant non pas à des transferts d'information transatlantiques ou transeuropéens, mais bien à des échanges mondiaux entre centres d'activité scientifique, avait pour objectif d'établir des connexions entre des îlots de savoir et de collecter l'information bibliographique relative aux éléments dispersés des sources mêmes du travail intellectuel.

▪ In de loop van de negentiende eeuw kreeg het eerder sporadisch gebruik van indexatie fiches voor de catalogusteknik van grote collecties boeken in de Europese bibliotheken een permanent karakter, om later de Atlantische oceaan over te steken en de nieuwe wereld te bereiken. Dit artikel houdt zich bezig met de effecten van deze bewaringstechniek voor informatie toen de instellingen zich toespitsten op de kennis van de methode en zijn belofte (vooral die van de universele standaardisatie) om de catalogus op fiches verplicht in te voeren als onmisbare basis voor hun eigen werk. Het precieze geval van "Die Brücke" ("De Brug") wordt bestudeerd: dit Duitse comité, dat zich niet beperkt tot transatlantische of transeuropese informatie-overdracht, maar wereldwijde uitwisseling tussen wetenschappelijke activiteitscentra beoogt, had zich tot doel gesteld om kenniselanden onderling te verbinden en bibliografische informatie te verzamelen over de verspreide elementen van de eigenlijke bronnen van het intellectuele werk.

Bibliographical efforts around 1900

While the slogan "*Free libraries for every soul*" becomes a bone of contention between librarians' factions in Germany, the remaining points of Dewey's reform program are less controversial in the Old World. Perhaps the most important transmitter that spreads some of the American Library Association's arguments is in fact the Institut International de Bibliographie in Brussels, founded in 1895 by Paul Otlet and Henry La Fontaine, the latter having coined the phrase "*memory of the world*" in connection with the first international bibliographical conference². "*What the founders of the institute have in mind is, ideally, gathering book titles from all times and peoples in one central location, in two separate series, an alphabetical author's index and a subject index using the decimal system*"³.

Since Dewey's decimal classification (an indispensable basis of the plan) is still regarded with skepticism in German libraries, the institute programmatically aims at its dissemination. Hence, the scheme includes "*perfection and propagation of the Dewey decimal system [and] production of "Bibliographia universalis", i.e., a catalog comprising the world's entire book production arranged according to the decimal system on slips of paper by (a) copying and unifying the titles from every large library, (b) cataloging every new publication*

(books and articles)"⁴. In addition to financial support by the Belgian crown, the capital for this project consists of 400,000 slips of paper in "*boxes contrived after the American system*"⁵ that form the basis for a world catalog compiled by La Fontaine and Otlet. The growth of the card index leaves little to be desired. By 1897, the universal register already contains about 1 million entries; by July 1, 1903, there are 6,269,750, and by 1914, more than 11 million slips of paper⁶. With an annual increase of approximately 500,000 entries, estimates see the project covering the "*entire book production since the invention of the printing press*", anticipating the end of this gigantic enterprise after another ten years⁷.

It is no coincidence that the development of the *Bibliographia Universalis* is reminiscent of Konrad Gessner's efforts. As a method for the production of index cards "*by cutting and pasting bibliographical aids*", it undoubtedly harks back to this origin and bears a striking resemblance to its parameters even 350 years later – despite the improved copying procedures and printing methods, paper quality, and cutting devices that were developed in the meantime⁸.

Following emphatic recommendations by the bibliographical institute in Brussels, the doctrine of basing data collections on semantic arrange-

ments sorted with decimal figures is slowly adopted in business applications and, with some delay, also by the Prussian administration. "A number of companies in Germany (Brown, Boveri & Co., A.E.G. among others) have introduced [decimal classification] for their card indexes"⁹. Electronics firms, the industrial avant-garde in the corporate age, follow the suggestion willingly, yet libraries remain hesitant. Finally, in 1911 a "preparatory committee" attempts to imitate the Brussels bibliographical system – copying individual concepts like *World brain* and the aesthetics of illustrations¹⁰ – and its administrative imports from the United States¹¹. This committee, later attracting considerable attention, was not aiming exclusively at librarians; it bears the telling name "The Bridge" ("Die Brücke"), referring not to transatlantic or trans-European transfers, but to a worldwide transfer of information between centers of scientific activity. The goal is to establish connections between islands of knowledge and bridge the shallows in the sea of ignorance¹². Although both institutes have similar aims, the committee sees itself less as the German-speaking branch of the bibliographical world catalog in Brussels than as an independent enterprise with its own original objective – for it aims not at collecting bibliographical information pertaining to old and new knowledge, but the atomized components of the very sources of intellectual work. Nonetheless, the intended field of operation – as in Brussels – includes the entire world, with The Bridge seeking to become its productive "brain"¹³.

May 1911 sees the publication of *The Organization of Mental Labor* by "The Bridge", by Karl Wilhelm Bühner and Adolf Saager. The authors' aim is unequivocal. "The principal purpose of our book was to win Ostwald for our cause" – namely, as a promising financier and mediator for knowledge workers¹⁴. Encouraged by having read Wilhelm Ostwald's book *Energetic Bases of Cultural Studies*, the journalist Saager succeeds in translating Bühner's ideas, despite communicative difficulties, into a joint text, and to establish contact with Ostwald¹⁵. In spring 1911, Saager sends printer's proofs to Ostwald's country house in Groß-Bothen¹⁶. Ostwald responds immediately; they meet and found The Bridge as an International Institute for the Organization of Mental Labor. The capital consists of 100,000 Reichsmark (a third of Ostwald's of Nobel Prize money) and a friendly donation by the industrialist Ernest Solvay.

"The purpose of The Bridge is the avoidance of all superfluous energy spent in the entire area of pure and applied mental labors, and in connection with this, liberating the creative mind from the shackles of preliminary mechanical work.

These energy savings should be achieved by planned organization of mental labor, namely:

- *Through full exploitation of mental labor as done currently: by means of an international information exchange that should provide anyone with answers to any question;*
- *Through suitable organization of the more organizable – that is, mechanical – processes of future mental labor: by means of an international organizing agency that shapes the forms of mental labor of all kinds so that every individual project fits by itself into the whole organism"¹⁷.*

Formatting the world at Schwindstrasse 30

Aside from the additional plans that Ostwald has for the institute – for instance, spreading the "energetic imperative", as indicated in the above quotation, or promoting the metric system in the English-speaking parts of the world – one central point unites the otherwise very differently motivated initiators: namely, how to achieve these ideas¹⁸. They regard the written sheet of paper as culture's basic technical form. The *Monographic Principle* plans to take down every single thought faithfully in its ideal form, on paper, in standardized format¹⁹. "If mental labor is to be organized, one must begin with the organization of the memo"²⁰. Since bookbinders are the enemies of mobility, giving each free thought its own piece of paper to connect it with other building blocks of knowledge is essential. Thus, modularized world-knowledge is to be stored on monographic index cards at the "reference desk of reference desks,"²¹ Schwindstrasse 30, in Munich. This will afford intellectuals the means to recombine monographic thoughts into new constellations²². However, before they can store any such knowledge, the slips of paper must all have the same size, the so-called "world format" – a precursor of the DIN and ISO formats of German industry standards, but a successor of the "mono format", the brainchild of a company that was bankrupt by 1911, and whose sales representative and chief administrator had been none other than Karl Wilhelm Bühner²³.

The logic with which The Bridge proceeds to implement a world format is a clever syllogism. The Bridge can only become a reference center for world experts if world experts contribute, that is, share their results with The Bridge. The infrastructure must be established by specialists as well²⁴. However, the most significant scholars of the world have other things to focus on than "solving organizational problems; [...] the execution is in every isolated case a matter of exper-

tise, as it is everywhere, thus of the organizer and therefore again a matter for *The Bridge*"²⁵. Only *The Bridge* feels capable of this task, and thus it authorizes itself to take remedial action. Its organizational innovation movement pursues two strategic purposes:

- An "archive that will introduce a comprehensive illustrated world encyclopedia on single sheets of uniform format". At first, world knowledge is to be put down by professionals on standardized slips of paper and kept in standard boxes in a world format²⁶.
- A "collection of addresses, containing the addresses of all living knowledge workers"²⁷. Furthermore, they aim to gather pointers to knowledge, which by virtue of their own addressing logic lead to new information.

Other endeavours

Maybe the ads for Library Bureau²⁸ and the organizational achievements they promise encourage a belief that with the help of a suitable apparatus and thanks to the considerable time savings that ensue, "everything can be stored"²⁹. Operating an index card box tempts people to develop a euphoria of totality – and not only the *The Bridge* members. In 1897, the imperial librarian in south Berlin, Christlieb Gotthold Hottinger, announces a *Book Slip Catalog and a Bio-Icono-Bibliographical Collection*, nearly at the same time as Otlet's institute does so in Brussels, and presumably inspired by American index card printing³⁰. The second edition of this announcement – parallel to that of *The Bridge* – in May 1911, once again presenting the idea of an archival storage "of the world", especially in terms of knowledge work. Paper slips in the international format are to be indexed and sent to subscribers, not without also gradually including older printed works in Latin, German, English, and French. "Retroactively, anyone who has published written works or has been otherwise outstandingly active is taken into consideration"³¹. To provide a location for the compilation of this "total card index" and to guarantee the future growth of the project, all information should enter the "paper slip headquarters (with typesetting, reproduction, clichés, galvano-plastics, printing press, bookbinding, warehouses, a bookstore, delivery, and editorial staff with a large reference library)"³².

Unlike *The Bridge*, Hottinger's plan relies on decentralized and active cooperation, and Hottinger asks all "friends of intellectual life" to participate. "With every single slip of paper, its author etches his name into the human monument of intellectual endeavor"³³. The two projects, the Bio-Icono-Bibliographical Collection and *The Bridge*, are

united by the field of operation they wish to occupy; they announce that their programs will cover no less than the entire world. If the world forms the totality of the scientific body of knowledge, *nothing* should be left over in the end. "Science cultivates a precision that tolerates no unaddressed remainders; in other words: science works with an eye to completeness". Besides the world, there is a second major category: "The totality of scientific thinking knows no restriction and [...] concerns the work itself, the object of the work, the space in which the object exists, and the time in which it exists"³⁴. Attempts to organize the world around 1900 are marked by a vision of completeness, though Hottinger limits the concept, while Bühner and Saager aggressively and clearly emphasize it. Now it is incumbent upon the aggregated index cards to achieve this completion.

Completeness and its contemporary critics

All these attempts to create a "gigantic", "universal", or "complete" recording of the world, whose brief genealogy leads from Otlet/La Fontaine to the forgotten Hottinger and on to Ostwald/Bühner/Saager, are aimed explicitly at a completeness that in today's view seems bizarre. Why do ideas and data management projects like these not appear earlier? They certainly have not been fostered at other times by increasing amounts of material that challenge the limits of experience. On the contrary, voices warning of a flood of knowledge always abound, as they do around 1900: "Even under the best circumstances, a complete collection of material is always the exception. [...] Despite the utmost completeness of our bibliographical police registration offices, the utmost diligence, and the most careful mutual control of the work, single volumes are bound to escape the list"³⁵. This is a sober insight that need fear no contradiction from the perspective of contemporary common sense. However, the successful exception remains speculative and is valid only under the tightest restrictions – for instance, in an investigation of "silkworms in the district of Mörs"³⁶. Only "primitive, simple factual material can be complete once and for all, yet it is so only under such rare conditions that these have to count as exceptions. The secondary academic material is in fact never complete, for the trivial, unfortunately unquestionable reason that all our knowledge is piecemeal"³⁷. In the eyes of *The Bridge*, this argument reads less like an attempt at destructive criticism and more like an encouraging confirmation of the need for modular building blocks that amount to a complete system stored in a suitable

memory bank. And it is presumably advertising for the memory procedures, already well established in the business world, that promise to save a lot of time by dint of a universal library technology. The contemporary library and administrative technology, the new office apparatuses encourage the pioneers of the world brain development in their bold projects. However, the card index, euphorically imagined as a mechanical memory machine, still obscures from view the robotic character of the machinery. Indeed, the input of records still requires a human being³⁸. The initiators of these global data projects succumb to the belief that having the algorithm also means immediately having the results.

Thanks to diligent writing and reading operations, the registers experience a steady growth. *"Our bibliographies for instance have bit by bit gained such a circumference that the full use of these complete lists is impossible"*³⁹, Richard M. Meyer objects angrily; his critique focuses soberly on the method, and he delivers the deadly argument of selection. *"The easiest and most practical way to emphasize what matters is to omit everything that doesn't"*⁴⁰. This is what Karl Wilhelm Bührer anticipates in 1907. *"One completely forgets how to separate the important from the insignificant, and then makes the excuse that in science, everything is important"*⁴¹. Four years later, however, the general manager of the Mono-Gesellschaft states, *"Organization will need to take pains to accomplish a complete precision that only a superficial man would describe as pedantic [...] The same attention must be bestowed impartially on every component; it must make equal room for a manufacturer's catalog, a poorhouse's chronicle, and the works of Homer or Kant"*⁴². Wilhelm Ostwald hesitates when reading about Bührer's view of science. He claims that Bührer hardly knows anything about science, yet fatally *"[leaves] it at that"*⁴³. When founding The Bridge and again later, Bührer insists on doing things his way, and Ostwald, in distant Saxony, has to give him free rein⁴⁴. Ostwald is evidently distracted by various other activities – for instance, the Monistenbund, the antichurch movement, or the development of the Glücksformel, the formula for happiness⁴⁵. Thus, some of Bührer's projects lack the required combination of pure theory and applied practice. With ideas like the *"irrigation of the Sahara"* (another totality project), the *"cultivation of vast swamp areas"*, or the *"reforestation of Greece and other civilized countries"*, seriously considered and declared as international cultural tasks, The Bridge moves closer to the *world archive for humor* than its founders might have intended⁴⁶.

What is left after the policy of no remains?

The function of completeness within the coordinates "labor" – "space" – "time" is fed expert knowledge to serve as a starting point for scholarly data processing. *"Only a completeness of observation approximately guarantees that no lapse is been committed and that chance is eliminated"*⁴⁷. Inspired by a system that omits marginalia – scientific thinking knows no secondary matters – The Bridge plans to prepare a world-answering machine. Its particular knowledge units await being absorbed into any possible connection – prompting scholarly paranoia: *"Even the slightest fact is significant, even if one may personally be convinced that it is not, because it might lead at some point to future conclusions"*⁴⁸. These stubborn assertions of the (academically untrained) former sales representative for advertising cards assume that a few mechanical tools can realize an all-embracing and world-encompassing collection of materials. Only the second strategy of The Bridge – namely, to compile references at the highest possible integrated level instead of collecting the material – points to Ostwald's yet unvoiced doubts about the attainability of completeness⁴⁹. Nevertheless, Bührer's activities soon drown out Ostwald's skepticism. Bührer proves that he has already forgotten the difference between signifier and signified. Instead of storing the address of a music archive in The Bridge's card index (as metainformation of metainformation) or copying its catalogs (as a transfer of metainformation), he goes ahead and purchases the entire archive⁵⁰. Tempted as he was by the idea of completeness, this was only the first, practical step to the realization of his plan.

The Bridge resembles Dewey's project in a quite unexpected way – its inevitable failure. The partners' financial plight intensifies when the expected donations by "very rich people" fail to materialize⁵¹. Meanwhile, Bührer leads the business inexorably into ruin. In June 1914, exactly three years after its foundation, bailiffs close the offices of The Bridge in Schwindstrasse 30. The proof of fundamental incompleteness will not be disclosed until 1931, when Kurt Gödel's proof of formally undecidable sentences is published⁵². Empiricism produces its joyless results sooner: the knowledge actually gathered in this ambitious world registration finally remains limited to a complete collection of postcards of the small town of Ansbach, transferred by Bührer himself into the global format as proof of his strategy and of the efficacy of the memory bank. The last part of the case history: *"A mere collecting frenzy takes the place of scientific work; a brutish greed*

for completeness"⁵³. At the trade show Office and Business in Munich in 1913, an astounded public witnesses Bühler's presentation of "mass-produced advertising stamps collected avidly by children, procured from everywhere and stuck on cards in the world format. First he carried this work out alone; then, however, owing to the abundance of the material he proceeded to enlist the staff of *The Bridge*"⁵⁴. After Ostwald settled the remaining business debts, he received the proceeds in postage-stamp-sized currency: "those

countless glued-on advertising stamps. Soon afterward the war broke out"⁵⁵.

Markus Krajewski
Bauhaus-Universität Weimar
Bauhausstraße 11
99421 Weimar
Germany
markus.krajewski@uni-weimar.de

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Notes

- 1 Prof. Dr. Markus Krajewski is the author of the book : *Paper Machines. About Cards & Catalogs, 1548-1929*. The MIT Press, 2011, ISBN 978-0-262-01589-9 and is also the developer of the bibliographic software *Synapsen: A Hypertextual Card Index*, <<http://www.verzetteln.de/synapsen>> (consulted on 30 April 2012).
- 2 La Fontaine, Henri. Une mémoire mondiale. Le Répertoire bibliographique universel. *La Revue : Ancienne revue des revues*, October 1903, n° 14, p. 201-208.
For the memorial function of the project, see:
Ernst, Wolfgang. *Im Namen von Geschichte : Sammeln, Speichern, Er/Zählen. Infrastrukturelle Konfigurationen des deutschen Gedächtnisses*. Wilhelm Fink Verlag, 2003
and for Otlet's pioneering role in documentation and informatics, see:
Buckland, Michael. *What is a "document"?* *Journal of the American Society for Information Science*, 1997, n° 9, p. 804-809.
- 3 Thron, Josef. Das Institut International de Bibliographie in Brüssel : Gegenwärtiger Stand seiner Arbeiten und Veröffentlichungen. In Institut international de bibliographie. *Publications de l'Office international de bibliographie*, Brussels, 1904, p. 11.
- 4 Thron, op. cit., p. 5.
- 5 Junker, Carl. Das Internationale Institut für Bibliographie in Brüssel. In: *Office international de bibliographie*, Vol. 19, Leipzig, Ramm & Seemann, 1897, p. 7.
- 6 See Junker, op. cit., p. 7, and Thron, op. cit., p. 20.
- 7 Thron, op. cit., p. 12.
- 8 Junker, op. cit., p. 7.
- 9 Niemann, Willi Bruno. Das Dewey-System (Dezimal-Klassifikation) und seine Verwendbarkeit für Bibliotheken und Literatur-Karteien. In *Wege zu technischen Büchern*, Vol. 2. Verlag von Robert Kiepert, 1927, p. 5.
- 10 In the internal bulletin of the Brussels institute, these images are accompanied by artistic organigrams in an aesthetics that is taken up by other adaptations of worldwide registration, for instance, in Dewey's decimal classifications.
- 11 Bühler, Karl Wilhelm and Saager, Adolf. *Die Organisation der geistigen Arbeit durch "Die Brücke"*. Fr. Seybold's Buchhandlung, Ansbach, 1911, p. 2.
- 12 See Bühler and Saager, op. cit., p. 1. That a bridge takes you from one side of a stream to the other side eludes the metaphor here.
- 13 Bühler, Karl Wilhelm and Saager, Adolf. *Die Welt-Registratur: Das Melvil-Deweysche Dezimal-System*. Fr. Seybold's Buchhandlung, Ansbach, 1912, p. 11.
For a more comprehensive description of the project, see
Krajewski, Markus. *Restlosigkeit: Weltprojekte um 1900*. Fischer Taschenbuch Verlag, 2006, chap. 2.4, p. 102-129
as well as
Hapke, Thomas. *Wilhelm Ostwald und seine Initiativen zur Organisation und Standardisierung naturwissenschaftlicher Publizistik : Enzyklopädismus, Internationalismus und Taylorismus am Beginn des 20. Jahrhunderts*. In

- Meinel, Christoph. *Fachschrifttum, Bibliothek und Naturwissenschaft im 19. und 20. Jahrhundert*, Vol. 27 of Wolfenbütteler Schriften zur Geschichte des Buchwesens. Otto Harrassowitz Verlag, 1997
- Sachsse, Rolf. *Das Gehirn des Welt : 1912. Die Organisation der Organisatoren durch die Brücke*. In Weibel, Peter and Sachsse, Rolf. *Wilhelm Ostwald : Farbsysteme / Das Gehirn der Welt*. Hatje Canz Verlag, 2004.
- 14 Saager, Adolf. *Die Brücke: Historisches*. Unpublished typescript, archives of the Wilhelm-Ostwald-Forschungs- und Gedenkstätte. Großbothen, 1921, p. 8.
Around 1910, the addressee, Wilhelm Ostwald (1853-1932), is not only a Nobel Prize-winning founder of the field of organic chemistry but also a theoretician of organization.
- 15 "As he said, his plan was by and large done. But as his expression appeared to others to be unclear and jumpy, it was impossible to understand his plans without devoted attention, and so I developed a small program and then wrote a book, once a publisher was found, in which I attempted to sift through and present Bühler's thoughts, systematically ordered and theoretically founded". Amid the Munich bohemians he meets a remarkable person, "a prophetic nature with strangely formulated ideas of salvation that certainly had a sound core, even if one did not, like their prophet, see them as the center of the world—a pugnacious fanatic for his idea for which he was willing to make any sacrifice, whom one might forgive his occasionally unwonted ardor—in short, a fascinating character who had the right to more attention than most of the countless apostles who haunted Munich. [Adolf Hitler perhaps?] While the other prophets all preached of health, soul, culture, humanity, religion, and other ideals, this man wanted to salvage the planet by the most prosaic and banal means—the paper format" (Saager, op. cit., 1921, p. 2).
- 16 See the illustration after the cover page of Ostwald, Wilhelm. *Lebenslinien : Eine Selbstbiographie*. Verlag Klasing & Co, Berlin, 1933. Polemically satirizing this was Carl Schmitt, writing under the pseudonym Johannes Negelinus and Mox Doctor (Negelinus, Johannes and Doctor, Mox, *Schattenrisse*. Skiamacheten Verlag, 1913, p. 17).
- 17 Die Brücke, *Was "Die Brücke" will*. Selbstverlag der Brücke, 1911, p. 1.
- 18 See Ostwald, Wilhelm. *Die Organisation der Organisatoren durch die Brücke*. Selbstverlag der Brücke, Munich, 1912, p. 17f. In addition to this project, which no by accident reminds one of Dewey's reform, The Bridge distributes his idea of decimal classification; see Bühler and Saager, op. cit. 1912, p. 3f.
- 19 See Ostwald, op. cit., 1933, p. 295, and Bühler and Saager, op. cit. 1911, p. 88f. The latter text is also the starting point for the publication series by The Bridge and the first application of the Monographic Principle.
- 20 Ostwald, op. cit., 1933, p. 295.
- 21 Ostwald, op. cit., 1933, p. 295.
- 22 This mode of knowledge generation exhibits surprising isotopic parallels to the notational practice of systems theory; see Luhmann, Niklas. *Kommunikation mit Zettelkästen : Ein Erfahrungsbericht*. In Kieserling, André. *Universität als Milieu*. Haux, Bielefeld, 1993, pp. 53-61, and the commentary in Krajewski, Markus. *Paper as Passion : Niklas Luhmann and His Card Index*. In Gitelman, Lisa. *Raw Data*, MIT Press, 2011, in press.
- 23 See Ostwald, op. cit. 1933, p. 301, and Krajewski, op. cit., 2006.
- 24 See the series edited by Ostwald, *Classics of the Exact Sciences*, and later *Great Men: Studies on the Biology of Genius*; see Pinner, Felix. *Emil Rathenau und das elektrische Zeitalter*. In Ostwald, Wilhelm. *Grosse Männer : Studien zur Biologie des Genies*, Vol. 6. Akademische Verlagsgesellschaft, Leipzig, 1918.
- 25 Saager, Adolf. *Die Brücke als Organisationsinstitut*. Fr. Seybold's Buchhandlung, Ansbach, 1911, p. 9.
- 26 The cards are kept in world format without room for marginalia, for they are the least conducive "for noting mental participation in the content. Rather, all notes, ideas, comments, references, etc., that arise in studying belong on index cards that are also expected to be in world format, so that they can be entered in the card index for later use" (Ostwald, Wilhelm. *Sekundäre Weltformate*. Fr. Seybold's Buchhandlung, Ansbach, 1912, p. 2). Secondary world formats thus allow recursive storage of what has been stored. The original series of cards (A series or normal format) requires a box (B series) that is slightly larger and contained in a drawer (C series) that in turn is slightly bigger... Only the postcard is still left out and has yet to be integrated.
- 27 Die Brücke. Internationales Institut zur Organisation der geistigen Arbeit. *Satzung*. 3rd Edition. Dr. C. Wolf & Sohn Kgl. Hof- und Universitäts-Buchdruckerei, 1911, p. 4.
- 28 A company created by Melvil Dewey to provide library supplies.
- 29 The English brochures have titles like "The Newest Force in Business Building" or "Armorclad Guides" and carry pictures of warships (both Library Bureau, no year).

- ³⁰ Hottinger, Christlieb Gotthold. *Ein Bücher-Zettel-Katalog und ein Bio-Ikono-Bibliographisches Sammelwerk*. Self-published, Berlin-Südende, 1911.
- ³¹ Hottinger, op. cit., p. 2.
- ³² Hottinger, op. cit., p. 3.
- ³³ Hottinger, op. cit., p. 3.
- ³⁴ Bühler and Saager, op. cit., 1911, p. 18. See also Krajewski, op. cit., 2006.
- ³⁵ Meyer, Richard. M. "Vollständigkeit" : Eine methodologische Skizze. *Euphorion. Zeitschrift für Literaturgeschichte*, 1907, n° 14, p. 4.
- ³⁶ Meyer, op. cit., p. 14.
- ³⁷ Meyer, op. cit., p. 9.
- ³⁸ For example, an advertisement of the Hinz Fabrik in Berlin-Mariendorf carries the slogan "The Hinz customer database - the memory of your business!" in *Das System*, 1 (5), p. 129. For the memorial discourse of storage systems, see Ernst, op. cit.
- ³⁹ Meyer, op. cit., p. 10.
- ⁴⁰ Meyer, op. cit., p. 11.
- ⁴¹ Meyer, op. cit., p. 14.
- ⁴² Bühler and Saager, op. cit., 1911, p. 26f.
- ⁴³ Ostwald, op. cit., 1933, p. 291, 293.
- ⁴⁴ Saager, op. cit., 1921, p. 36. In the beginning, the letters from Bühler to Ostwald show the usual devotion; see the correspondence in the Ostwald estate in the archive of the Berlin-Brandenburg Academy of Sciences.
- ⁴⁵ See May, Leo. The So-Called Happiness Formula of Wilhelm Ostwald. *Theorie und Forschung*, Vol. 463. Roderer, Regensburg, 1997; Gal, E. Geschichten vom Finden. *Schattenlinien*, 2 (4/5), 1991, p. 9f., and Krajewski, Markus. Zum Glück : Die Organisation der Welt um 1900, Neue Rundschau. *Standards*, 115 (4) special issue, 2004, p. 39-59.
- ⁴⁶ Saager, op. cit., 1921, p. 12. Note the importance of water in all these projects.
- ⁴⁷ Bühler and Saager, op. cit., 1911, p. 18.
- ⁴⁸ Bühler and Saager, op. cit., 1911, p. 20.
- ⁴⁹ Ostwald, op. cit., 1933, pp. 291, 293.
- ⁵⁰ Saager, op. cit., 1921, p. 46.
- ⁵¹ Saager, op. cit., 1921, p. 11.
- ⁵² See Gödel, Kurt. Über formal unentscheidbare Sätze der "Principia Mathematica" und verwandter Systeme I. *Monatshefte für Mathematik und Physik*, 1931, 38, pp.173-198 and, for an exegesis of his theorem of incompleteness, Hofstadter, Douglas. *Gödel, Escher, Bach : Ein endloses geflochtenes Band*. 12th Edition. Klett-Cotta, Stuttgart, 1989, p. 93f., 110ff.
- ⁵³ Meyer, op. cit., p. 13.
- ⁵⁴ Ostwald, op. cit., p. 304.
- ⁵⁵ Ostwald, op. cit., p. 305.