

P. Otlet's Mundaneum and the International Perspective in the History of Documentation and Information Science

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According to Paul Otlet, in order to face the worldwide interdependence which was evidenced in the First World War, we need an international center for the storage and dissemination of knowledge: **The Mundaneum (1928)**. To study this utopian project is to study how positivism, centralism, and monumentalism have determined Otlet's international perspective. His project of a colossal **Bibliopolis** contrasts very much with the position of **Georges Bataille** (a French writer who was librarian at the **Bibliothèque Nationale** from 1922 to 1942) who denounced the totalitarian threat of centralized monumental structures. But we show that, in spite of his centralism and his monumentalism, Paul Otlet foresaw our world-wide networked environment and that his three-dimensional conception of information can be still useful for developing **Computer Assisted Palaces of Memory** connected to **International Virtual Libraries**.

Introduction

In the history of documentation and information science, Paul Otlet has been both a precursor and a founder. His contribution as a precursor is now beginning to be recognized. W. Boyd **Rayward** (1994), for instance, has pointed out the way in which Bush's memex and hypertext/hypermedia systems were anticipated by Otlet's work. Whereas the precursor looks like a brilliant visionary, the founder seems more practical. We must keep in mind that without Otlet and La Fontaine, the founding of the International Institute of Bibliography (predecessor to the International Federation for Information and **Documentation**—FID) would never have occurred—at least as an effective process supported by the Belgian government.

Visionary precursor and realistic founder, these two aspects are inseparable in Otlet's work. In his view, factual plans must not be opposed to idealistic visions. For Otlet, each concept must find its appropriate space in order to materialize as a practice. This makes him a genuine founder. Even his more utopian projects are not ethereal ideas, but concrete architectural plans. He never ne-

glects spatial and geographical data. He is aware of contemporary data and the special features of his specific position in an historical period. But together with this, he has a broader vision, both in time and space. If he was able to forecast necessary evolutions, it was because he was able to take into account the radical changes that occurred following the First World War. Otlet understood that the correct scale for contemporary space could only be an international one in order to correspond to the worldwide interdependence that determined all aspects of social life since the First World War. According to Otlet, such an international space needs an international center in order to be rationally organized. That was the mission of the Mundaneum, an architectural project first conceived by Otlet, then designed by Le Corbusier (Gresleri, 1987).

To study the structure of the Mundaneum is to study how centralism and monumentalism determined Otlet's international organization of information. If Otlet's influence on the evolution of the international perspective in documentation and information science is still alive, historical changes have led to new modes of organization of the international space, which now looks more like the universal network forecasted by Otlet than like his monumental Mundaneum. Through our virtual networked environment, that international space looks more and more dematerialized. For Otlet, the perspectives of monumental centralized structures and of an international network were closely related, whereas nowadays, the first perspective appears out of date and the second one becomes more and more important. This is why if we fail to think of Otlet historically, we shall get no evidence of Otlet's consistency, as far as his international vision is concerned. Thus, we must start with the study of the historical context that determined Otlet's international perspective.

From the League of Nations to the Mundaneum: The Challenge of Worldwide Interdependence

According to Otlet (1928), humankind has reached the stage of worldwide interdependence. From his per-

spective, this fact was beyond dispute. It was evidenced in the First World War and the League of Nations. Otlet did not want to concede that the League of Nations emerged from the idealistic prospects of a few visionaries. As early as 1916, he not only forecasted its founding, but he published a detailed paper about its organization including ‘ ‘The four fundamental institutions **proposed**—the legislature, the judiciary, the executive, and the armed forces” (1916). However, Otlet did not want to emphasize his own role in the movement that led to the creation of the League of Nations. Given worldwide interdependence, its founding was not a result of personal commitment but was a result of “sociological determinism” (1928). But as necessary as it was, the League of Nations was never referred to as a miraculous solution by Otlet:

The union of all the States into an organised League of Nations would certainly not put an end to struggles and conflicts. They are the very essence of life itself. But they would be transformed, as internal conflicts have been. (1916, p. 140)

Otlet believed that worldwide interdependence could not help but result in violence and disorder, unless a rational organization managed to turn interdependence into solidarity. In Otlet’s scheme, solidarity is not a humanistic wish but a structural necessity. Like many researchers of his time, he regarded the different parts of society as different organs of a biological body.

According to this metaphorical model, Otlet depicted the new worldwide interdependence as a crisis in growth. But in spite of this biological metaphore, Otlet did not seem to think that the organization of this growing body would result in an irreversible natural process. In his view, the natural tendency of this worldwide interdependence is disorder. Whereas life is a negentropic phenomenon, international interdependence runs the risk of being entropic unless the rational organization of information manages to produce another kind of negentropic process. This is why Otlet is both a visionary and a realistic man. He not only emphasized the new international life as the main phenomenon of the 20th century, but he understood that the answers to this new challenge could not be efficient if they were not based on a rational organization of information at an international scale. This is precisely why he conceived the project of the Mundaneum.

In Otlet’s view, the coordination of national governments was not enough. The League of Nations was a necessary condition, not a sufficient one.

A genuine solidarity had to be actualized in the civil society. What has been recently stressed by researchers such as Howard Rheingold (1993) was emphasized by Otlet: The necessity for developing international links, not only at a political or economical level, but in civil society itself. As early as 19 16, Otlet said:

Public opinion must be prepared. It is not a question of establishing the how and when of peace, but what it actually means. Basically the people know little about how they have been led to fight each other or what the objectives of victory are. What is required is the creation in the masses of an attitude of mind, a clear understanding of the process that has caught them up, of the machinery in which they have functioned as parts. We can hope for the best only if we can rely upon a body of opinion ready to accept the great transformations that are necessary. (1916, p. 143)

In order to prepare public opinion, Otlet did not recommend advertising, but a worldwide organization of information. The masses must not be the parts of an unintelligible machinery but the active organs of a **body of opinion**. According to Otlet, the masses must not be passive in order to face the challenge of worldwide interdependence. The evolution from mass communication research to international communication was anticipated in his work. Globalization requires not only an international public opinion but an international civil society structured like a body of opinion.

But in Otlet’s view, an international body of opinion requires an “international body of documentation.”

The International Centre organises International Collections of world-wide importance. These collections are the International Museum, the International Library, the International Bibliographic Catalogue and the Universal Documentary Archives. These collections are conceived as parts of one universal and international body of documentation, as an encyclopedic survey of human knowledge, as an enormous intellectual warehouse of books, documents, catalogues and scientific objects. . . . The constitution of an International Center cannot be conceived without the organisation of important documentation services. (1914, pp. 116-I 17)

From his paper, entitled “The Union of International Associations: A World Centre” (1914), to the project of the Mundaneum (1928), Otlet never neglected to emphasize the need for a rational international organization of information in order to turn worldwide interdependence into solidarity. This is why Otlet appears as a pioneer not only in the field of international communication, but in the history of Information Science. He understood that their specific requirements were closely related. A worldwide access to information is necessary in order to prepare an active and democratic international public opinion.

Without such an organization of information, international cooperation cannot be effective. On this particular point, Otlet’s analysis differs from the traditional explanations for the failure of the League of Nations. Many historians, for example F. S. Northedge (1986), consider that one of the main sources for the failure of the League of Nations was the absence of sanctions against acts which

threatened the fragile balance of world peace. This lack of real constraint should have led to the helplessness of the League of Nations. But, according to Otlet, the real **helplessness** of the League of Nations lies in the very fact that “it resorts to constraint and to law, not to an inner conviction” (1928, p. 3). In other words, Otlet believed that, whereas worldwide interdependence was a necessity, it must not act as a constraint. Constraint only lets the natural tendency of this worldwide interdependence grow into its worst consequences: Violence and disaster. In order to rationalize all these interdependent links, you must take into account the human factor without which there is no genuine solidarity and, consequently, no genuine organization of the worldwide social body.

This aspect of Otlet’s conception belongs to a radically democratic pattern and it must be stressed for two reasons. First, Otlet appears as one of the first researchers who insisted upon the necessity for a democratic organization on an international scale. But second, Otlet not only pointed out the necessity for such a structure; he foresaw the technical devices for international communication which could innervate an international civil society. However idealistic, this aspect of Otlet’s internationalism was truly democratic, whereas other aspects of Otlet’s utopian scheme led, on the contrary, to unintentional totalitarian effects.

Positivism, Centralism, and Monumentalism in Otlet’s Utopia of the Mundaneum

W. Boyd Rayward (1994) is right when he criticizes the influence of Positivism in Otlet’s scheme:

Otlet’s concern was for the objective knowledge that was both contained in and hidden by documents. His view of knowledge was authoritarian, reductionist, positivist, **simplistic**—and optimistic! . . . For him that aspect of the content of documents with which we must be concerned is facts. . . . Otlet suggests that we should be able to remove facts from documents rather like we shell peas from their pods. Otlet does not address the question of how what has been established as true is to be recognized. (p. 247)

According to F. Dosse (1987, p. 50), the new generation of historians, who wrote in the journal *Les Annales* after the crisis of 1929, denounced a fetishist concern for facts even among the traditional historians. What was considered as scientific method appeared as an ideological positivist bias. The naive confidence in the transparent objectivity of facts and in the ineluctable progress of rationality appears as the two faces of a reductionist optimistic idealism.

More importantly, as W. Boyd Rayward has pointed out, Positivism, in Otlet’s scheme, is not only an unscientific bias which can be attributed to an idealistic vision,

it leads to an authoritarian, reductionist conception of knowledge. For example, in his article on the **Mundaneum**, Otlet says that the totality of **all** the objects of the various international associations covers “the entire circle of knowledge” [“le cercle entier des connaissances” (1928, p. 4)]. This does not simply mean that Otlet was a little too optimistic in regard to the possibility of an exhaustive knowledge. Such a possibility is implied in his very definition of knowledge as a limited circle whose precious elements, namely facts, are stable and can easily be identified. The circular structure implies in itself the exhaustivity of a bounded space. But it has other disadvantages. Since universal knowledge is a circle, it must be determined by a center.

Centralism is omnipresent in Otlet’s scheme. But Otlet never saw centralism as a potential danger. He went so far as to celebrate the concentration movement that gave birth, at the same time, to the centralized structure of international associations and to trusts and cartels (1928, p. 5). He did not see the danger of a single cultural institution which would pretend to have a monopoly on Universal Knowledge. He did not see the totalitarian implications of his utopian vision. In Otlet’s view, all the elements of human knowledge are supposed to be stored in one place: The Mundaneum. This is why in 1928, he finally chose Geneva as the best place to build the Mundaneum, whereas his previous projects of a world center (1914) were situated in Belgium. Otlet denounced “the regrettable tendency to divide the center and scatter its fragments in different places” [“Sans ceder d’avantage à la **tendance fâcheuse** de diviser le centre et de **l’éparpiller** par fragments en des lieux **différents**” (1929, p. 26)]. He said that all the international organizations, including not only the League of Nations and the **Mundaneum** but trusts and cartels as well, had to be located in one international city which must be unique in order to be a genuine center (1929).

As soon as they are concentrated in the Mundaneum, the international associations are assumed to divulge universal knowledge from this center to peripheric affiliated subgroups, either national or regional. According to Otlet, thanks to their centralized structure, international associations “have acquired a growing spiritual power” [“elles ont acquis un **pouvoir** spirituel croissant” (1928, p. 5)]. The Mundaneum must strengthen both this centralized structure and this spiritual power. Significantly, Otlet does not say an intellectual power or a cultural one. Symbolically identified with a spiritual power, the circle of knowledge acts as a kind of esoteric figure. C. Courtiau (1987) suggested that Otlet’s links with freemasonry need to be clarified and this hypothesis may explain the part of **esoterism** in his definition of knowledge as a spiritual power.

But what has been established so far is Otlet’s enthusiasm for architectural structures which symbolize spiritual values like the project of an International Center of Communication published by Andersen and Hébrard (1913).

According to C. Courtiau (1987, p. 64), the pyramidal structure of the International Museum designed by Le Corbusier had something to do with the religious architecture of the Mesopotamian ziggurat, represented in Andersen and Hebrard's book (1913), that Otlet showed to Le Corbusier when he asked him to conceive the project of the Mundaneum (1928) .

C. Courtiau (1987) and G. Gresleri (1987) also emphasized the reference to the Tower of Babel but they noticed that in the International Museum, the helicoidal movement was downward instead of upward and that it no longer symbolized humankind meeting the deity, but humankind exploring its own History. However, according to Hegel (1964), as D. Hollier has pointed out (1974), if the Mesopotamian legend of the Tower of Babel was the first evidence of the sacred value of architecture, it was because it symbolized union between human beings. In Otlet's scheme, the united efforts of human beings towards a universal knowledge is in itself the sacred value that architecture must symbolize. Spiralling down the pyramid from the prehistoric rooms to the contemporary collections, the visitor of the International Museum should experience a spiritual initiation through the different historical and geographical aspects of humankind.

Otlet liked the pyramidal museum designed by Le Corbusier. But pyramids are not the only sacred monumental structures. Historically, the Roman Catholic Church has understood the effectiveness of monumental cathedrals, in sustaining the strength of the spiritual power of the Church through the prestige of monumental buildings. The huge edifice may be a cathedral, a pyramid, or a tower. The important point is that spiritual edification must be based on a monumental architectural edification.

In Otlet's scheme, the conquest of universal knowledge is in itself the spiritual edification and both the Mundaneum and the International City are the monumental architectural edifications required to achieve such an aim. Otlet describes his International City, his "Bibliopolis," as "a colossal Book in which the architectural dispositions of the buildings will be read as people "read" the stones of the cathedrals in the Middle Ages" ["La Cité Mondiale sera un Livre colossal, dont les edifices et leurs dispositions—et non seulement leur contenu—, se liront, à la manière dont les pierres des cathédrales se "lisaient" par le peuple au moyen âge"] (1934, p. 420).

In order to be a genuine center, the International City would have to store the whole of knowledge in a monumental architectural structure. In Otlet's scheme, centralism and monumentalism were closely related. In order to fascinate all the peripheric recipients, the center would have to have a monumental architectural design. Otlet relied on the prestige of monuments in order to strengthen the spiritual ascendancy over people. He was right: Monuments may have a spiritual power. But this spiritual power may be dangerous precisely because it is effective.

In his journal *Documents*, Georges Bataille (1929) considered monuments to be evidence of the confiscation of the sovereignty of the people. In his view, this was the symbolic meaning of the fall of the Bastille in 1789. The Parisian people wanted to destroy the monumental evidence of an absolute power. Because they resorted to the prestige of monumental edifices in order to strengthen an absolute power, both spiritual and temporal, Bataille liked neither the Roman Empire nor the Roman Catholic Church. According to him, the stability of absolute powers and of imperialisms has always been based on centralized structures and on the prestige of huge monuments which defied the threatening power of changing time by their immobility.

Bataille denounced both centralism and monumentalism as the indissociable aspects of the paralyzing power of totalitarian organizations. According to him, centralized structures can only lead to the paralysis of the social movements which are necessary in order to create a genuine community. As early as January 1937, Bataille (1937), after detaching himself from the surrealist movement, denounced both Nazism and Stalinism, because he was aware of the inevitable totalitarian effects of centralized structures. In his view, a centralized organization always runs the risk of becoming a monocephalous structure exposed to the absolute power of the person who is at its head. When all the organs submit to the sole power of a center, there results a totalitarian consensus.

According to Bataille, centralized structures impede a genuine solidarity between the members of the social body whereas, for Otlet, they are the best rational organization to turn worldwide interdependence into solidarity.

In Bataille's view, there are two opposite conceptions of sovereignty and, consequently, of social organization. If you want to encourage free movement and communication between all the members of society, you must promote an acephalous structure which is tantamount to what today we would call a decentralized networked structure. If you want to set up a monocephalous totalitarian power, you must struggle against any sign of autonomous movement. For that purpose, you can rely both on the paralyzing power of centralization and on any device that tends to impose the worship of immobile architectural structures as the ideal form of an absolute rational power.

Of course? Bataille was aware that there are, evidences of authority other than monuments. Since he worked in the medal cabinet of the Bibliothèque Nationale from 1924 to 1930, he pointed out that some Venetian coins were not so much true coins as commemorative medals struck in order to celebrate the advent of the doge or the distributions of victuals which evoke imperial roman liberalities (Bataille, 1928). But even as a prestigious commemoration of authority, he prefers a medal to a monument since it does not imply a paralyzing conception of power. When he wants to strengthen his prestige, the doge does not forget that the real power of the republic

of Venice is based on commercial exchanges. In spite of its commemorative function, a medal is still a coin. Since it is convenient for circulating from one hand to another, it **generates** a network of exchanges instead of setting up a centralized structure. Whereas, as a former student of the Ecole des Chartes, Bataille chiefly considers medals as very precious historical documents, he prizes them too as means of communication.

According to Bataille, all kinds of documents such as medals, books, or even monuments can be valuable in so far as they convey true communication. In his view, a museum, for instance, may be defined as a colossal looking glass in which people are mirrored, but as such, its true content is the crowd of visitors. Its colossal aspect is not so important as the fact that it must play the part of the lung of a big town to which the visitors flow like blood and from which they come out purified. But the museum too is regenerated by their visit. Without the active part of the visitors, the paintings exhibited are but dead surfaces (Bataille, 1930).

In this conception of the function of a museum, Bataille appears as a precursor. In his time, it was generally thought that, of the two major functions of museums and libraries, to preserve documents and to give the broadest access to them, the first one, preservation, must have priority. As a former student of the Ecole des Chartes and as a librarian in the *Bibliothèque Nationale*, Bataille might be expected to share this view. But, on the contrary, he insisted on the fact that even a museum has to be, notwithstanding its patrimonial function, a means of communication adapted to the users.

If Bataille forecasted what will appear as the main function both of libraries and of museums, it is because he had a preference for decentralized open structures. This is why his writings insist on the active part of the user in a communication process. Thus, his vision anticipates not only the linking of library and museum professions with new documentary professions, but also the linkage which has been institutionalized in France between communication sciences, and documentation and information science.

According to Bataille, all documents remain dead letters unless people manage to use them as genuine means of communications with movements and exchanges. Even if monuments can sometimes convey such a **communication**, it is in spite of the paralyzing power they are assumed to embody. For Bataille, a huge monument often imposes silence, whereas medals “speak” of historical movements in a specific period. If Bataille, as a librarian and a writer, also liked books, it was in the sense that a book was not understood as a monument. As Denis Hollier (1974) points out, Bataille’s vision does not suffer from the metaphorical equation of the book and the architectural monument.

Unlike Bataille, Otlet was influenced by this **monu-**

mental conception of books even when he **described** then-transformation into files:

Further, all the writings ought to be reduced by a form of disintegration and readjustment into the form of **files** each conceived as chapters and paragraphs of a single universal book. . . . Such an encyclopedia will **be** a **monument** erected to the glory of human thought.” (1914, p. 119)

If Otlet forecasted the eventual disappearance of books, he thought that the monumental structure they embodied had to be preserved in order to form a “huge edification ‘from the files to the International City’ ” [“et ainsi **vraiment** une edification immense **s’élèverait avec** le temps: ‘de la **fiche** à la Cite Mondiale’ ”] (Otlet, 1934, p. 420).

Otlet was a founder, and he wanted to found monumental buildings as symbols of his view of Bibliography. From this point of view, his projects are the opposite of the dematerialized virtual structures which are developing today. However, he was also a man who foresaw a “universal and international body of documentation” (1914) as a worldwide network. That is why we must ask in our last part whether Otlet’s conception of international networks anticipated our contemporary networks or not.

The Architectural Scheme in Otlet’s International Organization of Information: Outmoded Paradigm or Prospective Tool?

At first sight, Otlet’s international perspective has nothing to do with our international networks. Whereas centralism and monumentalism were determinant elements in Otlet’s scheme, decentralization and **dematerialization** seem to be key words in our contemporaneous international space. Economical deregulation tends to struggle against traditional monopolies and to encourage free movements of exchange through decentralized international networks (Rieusset-Lemarie, 1992).

The Internet which is presented as the precursor network for the future information highway is both worldwide and decentralized. Some users want to preserve its decentralized structure in order to prevent any temptation of a monopoly which would control the whole of information in the global village. But other users are not satisfied with what they call the anarchic **structure** of the Internet. Some of them **are just** expecting new centralized services providing ‘ready made information’ from international sources. Others need sophisticated and complex information, but they just want to become the future consumers of high quality products. But we may wonder whether international networks are intended for such a **usage**.

One may argue that international networks, such as the Internet, can be used to disseminate information to a large number of passive recipients. In this case, the aim **is just** to send a message from one center to peripheral recipients.

But with these kinds of practices, you do not use the best capacities of the media. The best improvement of hypertext systems, combined with networked environments, is to let the user take an active part in their exploration. Hence the challenge of the future information highway is to take into account both the international scale and the personal scale. Whereas we must face this new challenge, Otlet's objective was to centralize and disseminate a universal knowledge.

As W. Boyd **Rayward** (1994) has pointed out, Otlet's primary concern was not the user of the system.

For Otlet it is not a case of how these new systems will respond adaptively to the incalculably various and idiosyncratic approaches of users. He is concerned with the way in which broad categories of users from various realms of intellectual and social endeavor will be able to use and benefit from what the systems provide. It is the user who **must** adapt to the systems not the systems to the user. (p. 247)

This approach is a direct consequence of Otlet's conception both of knowledge and of networks. In Otlet's positivist optimistic scheme, knowledge is an objective precious value. The problem, here, is how to provide this precious value to a large number of recipients. The more centralized the universal knowledge, the more precious its value. Hence, the mission of the universal network is merely to provide knowledge from this center to peripheral workstations where the users can receive it.

In our contemporaneous vision, this centralized unilateral structure is not a true network. A true network implies the possibility for dialogue, not only between the user and the source of information, but between all the users. But this term "network" is itself ambiguous. Television, for example, is called a network as well as the Internet. It means that centralized structures providing unilateral information are supposed to be networks too. But today, even television is envisaged to give an active role for its users. In Otlet's time, of course, this was not the case.

The revolutionary networks that determined Otlet's generation were centralized ones. In 1895, the year of the founding of the International Institute of Bibliography by Otlet, the technical revolution was that of electricity. **François Caron** (1985) has noted that, between 1895 and 1899, the possibility of providing a large number of users with electricity became real. The international electricity exhibitions, sponsored by the telegraphic services, which took place in the 1880s, contributed to the internationalist atmosphere and the positivist myth of progress typical of that period. The 20th century looked promising. The Age of Electricity seemed to open not only an era of economical prosperity and of technical innovation, but a new Age of Enlightenment providing all people with the light of universal knowledge.

But on the edge of the 21st century, we no longer

consider information to be just a "light" which one simply receives. Many users want to build their own knowledge through a dialogue with various international sources. Whereas hypertext systems and networked environments give them the possibility of such a dialogue, some of the new devices forecasted by Otlet (1935) seemed to reduce the user to a contemplative part.

All the things of the universe and all those of man would be registered from afar as they were created. Thus the moving image of the world would be established-its memory, its true duplicate. From afar anyone would be able to read any passage, expanded or limited to the desired subject, that would be projected onto his individual screen. Thus in his armchair, anyone would be able to contemplate the whole of creation or particular parts of it. (pp. 390-391)

However, notwithstanding his centralized scheme, Paul Otlet forecasted new possibilities which anticipated hypertext/hypermedia systems and even more sophisticated machines. As **W. Boyd Rayward** (1994, p. 245) points out:

The invention of machines with these capabilities would help realize the new kind of encyclopedia that was the ultimate desideratum of documentation and would make it "very approximately, an annexe to the brain, the substratum of memory, an exterior mechanism and instrument of the mind, but so close to it and so fitted to its use that it would truly be a sort of appended, exodermic organ." (Otlet, 1934)

This annexe to the user's memory, far from leading to contemplation, implies cognitive acts on the part of the user, who can be assisted by the machine in this active process.

Significantly enough, it is when Otlet is concerned with the cognitive process of memory that he is concerned with a machine fitted to the brain's user. Data must not only be duplicated in order to become information. The brain cannot store documents, it can only store information as a result of a complex work of organization. Otlet was aware that in order to help human memory, you must reflect upon clever modes of organization of information. Memory and information are closely related. This is why the science of information may improve mnemonic procedures. But, on the other hand, the arts of memory may appear as one of the fields which gave birth to some of the fundamental methods of the science of information.

The arts of memory which were part of rhetoric lessons from Antiquity to the Renaissance emphasized the necessity of organizing information through complex **procedures** in order to have a chance of recalling them in an efficient **way**. But they also insisted on the **necessity** of **locating** these data in a three dimensional **imaginary**

space. That was the task of the “Palaces of Memory” studied by Frances Yates (1966). According to her,

Augustine’s was a training memory, trained on the lines of the classical mnemonic. “I come to the fields and spacious palaces of memory [**campos** et lata praetoria memoriae], where are the treasures [thesauri] of innumerable images, brought into it from things of all sorts perceived by the senses.” Thus opens the meditation on memory, with, in its first sentence, the picture of memory as a series of buildings, “spacious palaces,” and the use of the word “thesaurus” of its contents, recalling the orator’s definition of memory as “thesaurus of inventions and of all the parts of rhetoric.” In these opening paragraphs, Augustine is speaking of the images from sense impressions, which are stored away in the “vast court” of memory [in aula ingenti **memoriae**], in its “large and boundless chamber” [penetrabile **amplum** et infinitum]. Looking within, he sees the whole universe reflected in images which reproduce, not only the objects themselves, but even the spaces between them with wonderful accuracy. (Yates, 1966, pp. 59-60)

Of course, these monumental palaces were imaginary ones, since they were created in the mind of their users. But Yates is right in stressing that their architectural structure must be very precisely conceived. If Augustine, as a teacher of rhetoric, became a master in this practice, he is not the only one to design a detailed architectural edifice. Any student had to do the same thing. Yates said that “The commonest, though not the only, type of mnemonic place system was the architectural type” (1966, p. 18). When he mentally walked through his Palace of Memory, the user could visualize the data he had stored inside them. Thanks to Yates, we may have a clear idea of this method:

The clearest description of the process is that given by Quintillian. In order to form a series of places in memory, he says, a building is to be remembered, as spacious and varied as one as possible, the forecourt, the living room, bedrooms, and **parlours**, not omitting statues and other ornaments with which the rooms are decorated. The images by which the speech is to be remembered . . . are then placed in imagination on the places which have been memorized in the building. This done, as soon as the memory of the facts requires to be revived, all these places are visited in turn and the various deposits demanded of their custodians. We have to think of the ancient orator as moving in imagination through his memory building *whilst* he is making his speech, drawing from the memorized places the image he has placed on them. (Yates, 1966, p. 18)

But the architectural edifice is not only convenient for storing images. The architectural configuration provides the user with a spatial rational organization of information: “The method ensures that the points are remembered

in the **right** order, since the order is fixed by the sequence of places in the building” (Yates, 1966, p. 19).

This means that many centuries before Otlet’s utopia of the Mundaneum, the ancient **philosophers** pointed out that three dimensional architectural structures were a necessary help in the difficult challenge of human **memory**: An efficient organization of information. In the article that he co-authored with Otlet on the Mundaneum (1928), Le Corbusier described the human being’s function as the one of an architect: To organize. In Otlet’s scheme **too**, the art of the architect is the art of organization. The management of information requires not only intellectual devices but a global organized vision from the urban means of communications to the specific modes of access to information. This is why Otlet belongs to the ancient utopian tradition which thought useful to design the architectural plan of a city in order to conceive an optimal social organization. The choice of an architecture implies in itself specific symbolic modes of organization. As his ancient predecessors, Otlet seemed to be convinced that the rational organization of the mind depends on the rational organization of space, thanks to an architectural scheme.

Of course, whereas Otlet wanted to build real monuments, the ancient Palaces of Memory were virtual buildings. In this virtual form, they could fit the desires of each user who built his own palace according to his specific organization of informations. The aim was not to build a unique centralized palace which would have stored all the informations. Each user had to build his own palace of memory in his own mind.

Because the Palaces of Memory are mental ones, they are often supposed to be dematerialized. The stuff they are made of is mental images, but this latter is not ethereal. It has not only a visual reality but it must look like a real palace. The user must feel in his palace of memory as if he were in a real palace. In order to store information in the Palace of Memory, students were advised to associate informations to phantasmagoric images because they strike the imagination and therefore, it is easier to remember them. But, if the images stored in the Palaces of Memory are supposed to be phantasmagoric, the architectural construction of the palace must be so realistic that you can walk in it as if it were real. Moreover, it is recommended that one build, not a mere house but a huge palace. Since the aim is to store a huge amount of information, the bigger, the better. So we see that even in these virtual mental edifices, there is some kind of monumentalism. Otlet’s scheme is not so different.

Of course, the building of these Palaces of Memory was influenced by the architectural models of their time. In the Renaissance, they were no longer built in the classical style of Antiquity but according to the baroque conception of architecture. Since the architectural dominant has changed, the Palaces of Memory might be less monumental today. But we must wonder whether they could

be deprived of edifices in order to be efficient. Could they be pure virtual networks nearly dematerialized?

The practice of the Palaces of Memory seems to suggest that without an architectural materialization, you cannot have an efficient organization of information. One may object that networks themselves develop a new kind of architecture. They are not totally dematerialized. But the temptation of many writers is to depict networks as if they were pure virtual structures nearly dematerialized. We must wonder whether this new conception does not run the risk of concealing the necessity of a three-dimensional conception in order to conceive of an efficient memory system adapted to the human memory of the users. This is why Otlet's three-dimensional conception of information is so important.

As Michael K. Buckland (1991, p. 586) points out, "Otlet is known for his insistence that a document could be three dimensional." Otlet's three-dimensional conception of documents is deeply influenced by his architectural scheme which appears as one of the dominant structures of both his thought and his projects. If his monumentalism is an outmoded paradigm, his architectural scheme is still useful.

Many researchers, such as Jean-Pierre Balpe (1990), have pointed out that hypertext systems need an important series of mapping devices for the guidance of potential users. But hypertext systems are so complex that a multi-dimensional representation should be required instead of a two-dimensional map. Of course, one cannot go beyond three-dimensional representations because they need to be visualized by the users. This is why an architectural representation can be useful. A three-dimensional virtual environment may help the user in order that he or she does not go haphazard through the hypermedia system. Hence Otlet's architectural scheme, which was much more adapted to international centers than to the local needs of the user, could be useful in conceiving of personal Palaces of Memory and not only international palaces like the Mundaneum.

Otlet's Mundaneum and the Palaces of Memory are not in opposition to one another. They are complementary tools. In Otlet's scheme, one can envision links between personal libraries and the universal international library. The architectural organization of the universal library can be a model for the building of personal Palaces of Memory. The machine of which Otlet foresaw the emergence, able to be an annex to the brain and to memory, could be a hypermedia system linked to a virtual library by an international network. The workstations anticipated by Otlet could be Computer Assisted Palaces of Memory connected by telephone to "an immense edifice containing all the books and the information, together with all the resources of space needed to record and manage them" (Otlet, 1934, p. 428; cf. Rayward, 1994, p. 245).

This immense edifice could appear as a huge international virtual Palace of Memory connected to the Palaces

of Memory of each user in an international network. Otlet's anticipations are not so far from this scheme. The architectural perspective could be virtualized by means of multimedia three-dimensional systems. The role of the user would be more active. Such a system would go beyond Otlet's outmoded paradigm influenced by a monumental centralized conception of knowledge. But Otlet's models could be considered as precursors of this kind of networked environment which would take into account three fundamental aspects that he stressed: First, the necessity of the organization of information in order to build an efficient memory; second, the necessity of international coordination by a worldwide network; and, last but not least, the role which architectural structures can play in organizing information, both at the international and the personal scale, even if these architectural structures may be virtual in our postmodern environment.

Otlet's conception, even in its apparently outmoded features, is still a determinant prospective tool in our contemporary international environment. If it is recognized that his contribution to documentation and information sciences was vital, it must be admitted that he is still a pioneer in the history of the next century. This does not mean that things have not changed. But even if history has changed the form of worldwide interdependence, this is still our challenge in the new virtual space of globalization

References

- Andersen, H. C., & Hébrard, E. M. (1913). *Creation d'un centre mondial de communication*. Paris.
- Balpe, J.-P. (1990). *Hyperdocuments, hypertextes, hypermédias*. Paris: Eyrolles.
- Bataille, G. (1928). La collection **Le** Hardelay du Cabinet des **Médailles**. *Aréthuse*, 3, 117–119. (In Bataille, G. (1970). *Oeuvres complètes*, Vol. 1. Paris: Gallimard)
- Bataille, G. (1929). Architecture. *Documents*, 2, 117. (In Bataille, G. (1970). *Oeuvres complètes*, Vol. 1. Paris: Gallimard)
- Bataille, G. (1930). **Musée**. *Documents*, 5,300. (In Bataille, G. (1970). *Oeuvres complètes*, Vol. 1. Paris: Gallimard)
- Bataille, G. (1937). Propositions. **Acéphale**, 2, 17-21. (In Bataille, G. (1970). *Oeuvres complètes*, Vol. 1. Paris: Gallimard)
- Buckland, M. K. (1991). Information retrieval of more than text. *Journal of the American Society for Information Science*, 42, 586-588.
- Caron, F. (1985). *Le résistible déclin des sociétés industrielles*. Paris: Librairie **Académique Perrin**.
- Courtaud, C. (1987). La **Cité** internationale, 1927-1931. In *Le Corbusier à Genève, 1922–1932, Projets et réalisations* (pp. 53-69). Lausanne: Payot Lausanne.
- Dosse, F. (1987). *L'histoire en miettes*. Paris: La **Découverte**.
- Gresleri, G. (1987). Le Mundaneum, lecture du **projet**. In *Le Corbusier à Genève, 1922–1932, Projets et réalisations* (pp. 70-78). Lausanne: Payot Lausanne.
- Hegel, G. W. (1964). *Esthétique*, Vol. VI, "Les arts plastiques," "L'architecture," trad. **Jankélévitch**. Paris: Aubier.
- Hollier, D. (1974). *La prise de la Concorde, essais sur Georges Bataille*. Paris: Gallimard. [English translation: (1989). *Against architecture: The writings of Georges Bataille*. Cambridge, MA: MIT Press.]

- Northedge, F. S.** (1986). *The League of Nations*. Leicester: Leicester University Press.
- Otlet, P. (1914). *Union of International Associations: A World Centre*, Publication No. 60; Bruxelles: Union des Associations Internationales, Office Central. [In W. B. **Rayward** (Trans. & Ed.), (1990). *International organisation and dissemination of knowledge, selected essays of Paul Otlet*. Amsterdam: Elsevier]
- Otlet, P. (1916). Organisation of the Society of Nations. In W. B. **Rayward** (Trans. & Ed.), (1990). *International organisation and dissemination of knowledge, selected essays of Paul Otlet*. Amsterdam: Elsevier.
- Otlet, P. (1928). *Mundaneum*, Publication No. 128 de l'Union des Associations Internationales. Bruxelles: Palais Mondial.
- Otlet, P. (1929). *Cite mondiale*, Publication No. 133 de l'Union des Associations Internationales. Bruxelles: Palais Mondial.
- Otlet, P. (1934). *Traité de documentation*. (1989, reprint). Liege: Centre de Lecture publique de la **Communauté française**.
- Otlet, P.** (1935). *Monde: Essai d'universalisme: Connaissances du monde. Sentiments du monde. Action organisée et plan du monde*. (Editiones Mundaneum). Bruxelles: D. Van **Keerberghen** et fils.
- Rayward, W. B.** (1994). Visions of Xanadu: Paul Otlet (1868–1944) and hypertext. *Journal of the American Society for Information Science*, 45, 235-250.
- Rheingold, H.** (1993). *The virtual community*. Readings: Addison-Wesley.
- Rieusset-Lemarié, I.** (1992). *Une fin de siècle épidémique*. Arles: Actes Sud.
- Yates, F.** (1966). *The art of memory*. London: Routledge & Kegan Paul.