A brand new type of "digital dis-order" in an urban cooperative service model

A new model for the application of machine learning technology to a territorial context in which libraries express the role of "Cultural Hub": services individualized to the users and long-term sustainability

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Abstract:

CSBNO (Consorzio-Sistema Bibliotecario Nordovest, i.e. "Northern-Western Milan Library Consortium") is the biggest Italian Consortium and the largest organization born and developed in an urban metropolitan environment. Today the Consortium plays the role of a "Cultural Hub" for up a million citizens and also for many economical subjects, offering them several types of services of all kinds, not only in traditional areas. To best communicate to large and differentiated audiences CSBNO intends to use the Machine Learning Technology, the same born and grown up to be pervasive in digital economical environment and now universally used in the Internet related services, but in a peculiar and original way. The concept is to merge the traditional Library Science Classification tools with the new Machine Learning Technology to obtain a new powerful tool, more precise and more intelligent than the ones used in the common e-commerce platforms, because of its high level starting knowledge base, composed by DDC classes, structured Subject Headings, Standard Thesauri etc. all linked together. The goals are to achieve a new paradigms for communication to audiences, a new digital way for Library traditional services and even a new form to obtain sustainability.

Keywords: machine learning, recommendation system, digital service(s), personal reference

The Context

The CSBNO (North Western Library Consortium)

In Italy the history of library cooperation starts off in the seventies, when a constitutional law, the Presidential Decree n. 3/1972, made the Central State transfer to the Regions some administrative functions, including those relating to the local authorities libraries. The

Regions - most notably our Lombardy, in 1973 - as well began to exercise the newly acquired skills by setting rules, tasks and objectives of public libraries. During the next forty years in our country, the library cooperation has come to develop so strongly fragmented and so now, according to a 2014 census, 5,465 libraries are owned by 205 networks.

The fragmentation was accompanied by heterogeneity in the legal form of national aggregation phenomena, and the simple form of Convention was clearly prevalent than associations, program agreements, foundations, associations and others. All the various library aggregates were invested by several regional laws and led to the task of developing the basic library services such as cataloging, automation of loans and purchase, in every homogeneous territorial area.

The CSBNO was born in 1997, inheriting a long tradition of cooperation in the geographical area of Northern Milan. The target was to perform services directed to the network with more than fifty libraries, as provided by the aforementioned Lombard regional legislation, in the meantime updated by a new law in 1985. The feature of this kind of services is to be invisible to the library users and patrons and to the rest of the approximately seven hundred and fifty citizens of the territory.

The advent of the OPAC and the strong automation of book interchange services between libraries (over 30% of the movements of each library is based on the assets of the other ones or on other library users, that made the management of the entire network really unified), introduced a strong element of transformation: progressively the CSBNO changed his shape and began the transition from the role of a simple dispenser of services operating behind the scenes to a direct public speaker.

This change gets further boost by the fact that the CSBNO, that is one of the few Italian library organizations to qualify itself as Special Company, interprets its calling in highly entrepreneurial perspective. This means that if on one hand it repeatedly proves able to formulate innovative visions, the other manages to foster complex processes of cooperation and to create the sustainability profiles needed to translate visions into practical services for libraries, but also - and more and more - for citizens.

The evolution of a service identity

In nearly two decades of design and provision of library services, the CSBNO has produced an innumerable amount of consolidated results, operating mainly towards the affiliated libraries, which were the only beneficiaries of the services for over a decade. From organizational services to the direct management of libraries, from centralized cataloging to design consultancy, from the promotion of reading to refresher courses for librarians, the real target of the Consortium was the librarians working in the affiliated libraries to the point to have as a sign of identity and motto: "the invisibility praise" towards the library users and patrons.

More recently the activities of CSBNO began to include, timidly at first then more and more openly, a fair amount of services that are given directly to the library users and patrons, up to make explicit the figure of CSBNO in the role of direct deliverer of services to the citizens, always next to the library and always as his partner, but now even at the forefront. From invisibility to visibility, today this step obliges the CSBNO to invest in communication to the

public and to consider the central importance of the image communicated to the people in the construction of the identity of a Public Agency.

National Agency

Parallel to the change in the approach to the end-users of library services, the size achieved in operating as a provider of services to affiliated libraries, led the Consortium to act as a privileged interlocutor of the other Italian Library Networks, even outside the institutional boundaries of municipalities participating, becoming a true service provider account third in the panorama of library cooperation.

This evolution of the role of CSBNO required institutional reengineering, which has recently led to a new Consortium Statute in which the identity of CSBNO is outlined starting from the ambitious role of the National Agency of Library Services. Today the Consortium is no longer just an instrumental company for municipalities that were its founders, but an Agency that is the candidate to play a strategic role in development and innovation of library and cultural services for the entire country.

Coalescence of Cultural Services

The historical route traced by CSBNO in its becoming "more and more," has determined, in the eyes of a neutral observer, the progressive pulling together of services and initiatives, the constant juxtaposition of events and projects, each one with its own specific public and each one with its own connotation in the world of culture.

Today the public concerned by the Consortium is articulated in at least four broad categories: a) Local Authorities, Institutions and Municipalities, whether they are internal or external to the initial perimeter of the cooperation; b) the librarians and the staff working in libraries, now without a real geographical limitation; c) the audience of end-users of libraries and cultural services in general; d) companies and economic actors of the territory.

Even more varied it appears to be the provision of services that over time have been joined in a real catalog, but through a specific evolution: taking as a paradigm of the bid segment of the training courses, for example, they not only have to be provided in any field of human knowledge, but it is now well established that they should run away from courses for librarians, to courses for end-users to finish with courses for companies.

Guided tours, training courses, cultural events of all kinds, laboratories and co-working... constitute and qualify a bouquet of services unique in the library world in Italy, and they bring new audiences to the cultural enjoyment.

Several audiences for culture

The expansion of the "domain of the cultural" and the issue of communication

If on one hand new public face to cultural enjoyment, on the other hand is the "domain of the cultural" itself to have greatly expanded, reaching today to include performing and visual arts, literature, as well as cultural heritage, cinema and also expressions of the natural environment and of the man-made environment, local traditions, gastronomy and the whole complex of the material cultures.

These two different trends (enlargement of the public of culture and expansion of the "cultural" borders) have profoundly changed the concept of "public of the culture", as did the web and the social networks: they act multiplying exponentially the opportunity to have information and to have relationships but also the manners to enjoy events and cultural activities.

However, if we are witnessing an increase in the amount of public of culture, there are still segments of population in which the cultural fruition is excessively elitist and, on the other hand, much more people have inadequate ways of fruition which often reduce the cultural experience in a ritual and standardized practice.

Among the factors that inhibit the conscious and informed access to cultural fruition, there is certainly the overabundance of heterogeneous and disjointed information, over the ability of receiving and elaborating information by the potential user. Without incurring the paradox of Bauman[1] (which states that in our society of information it is necessary to defend ourselves from much of the information), however, we can say that the potential users of cultural services remain in a state of "information overload", because they are subjected to a constant flow of information, to the point they lose the possibility to make decisions and the ability to focus their attention.

The result is that the users and in general all the people, are taken to the point to protect themselves from the excess of received information, evading it: this strongly decreases the effectiveness of communication and make real the risk the people reject even the information that would be interesting and useful for the recipient.

A Possible Federation

Is it possible to federate together the different publics of the culture? Yes, it is possible.

And we say that this opportunity is in the individual, that is, in the individual user, the individual visitor, the individual frequenter of musical concerts, cinemas, theaters, museums, exhibitions, or libraries.

In fact today in our country does not exist a Register for Cultural Fruition or even an Agency that could be able to certify or quantify these activities. As we seen above in the case of CSBNO evolution, so it is if we look at the whole world of the culture: on the one hand the process of juxtaposition and coalescence of cultural services and on the other the extension of the concept of "culture" bring different agencies and institutions to communicate and certify their own numbers, without it being possible a synthesis.

No one can prove that among the millions of movie-goers there are also the library-goers or, in other words, no one can prove that the visitor to a museum is, or vice versa, is not, the audience of a concert at La Scala.

Traditionally it is possible to know the quantitative data of the individual sector (tickets sold for the music, for movies, for the museum, patrons of the libraries, books sold in bookshops…) but until now it was not possible to know the real data, purified from

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[1] Culture in a Liquid Modern World / Zygmunt Bauman, copyright 2011

redundancies and from overlays between different segments of cultural fruition, the purified data, brought back to the real sum of all the individual identities of those users.

Recognizing the Public of the Culture

The opportunity to remedy this knowledge gap is given by the peculiar evolution that have undergone the role and the identity of CSBNO over time: in these two decades, we saw the transition through the request for a registration in the library to the enrollment in training courses, from the reservation to participate in the meetings with the authors to the purchase of tickets for theaters, for concerts or for the Expo.

This modus operandi has produced an immense amount of identification data that, in line with the trend detectable for the whole country, were collected in non-uniform manner but aimed only at the individual asset. Those data could have been collected merely for personal identification or even for economical transaction or also for ticketing. This lack of unity has necessarily determined a certain level of redundancy over time, that was detectable even more if the goal is the uniqueness of the user or, in other words, recognizing the users one by one in their own personal identity.

A single pool of Users - Persons

Recognizing the individual identity of each of the users of the various service areas offered by a "cultural hub" as really the CSBNO is, means first of all to check the intersections between a service and another and then, to bring out the individual identities in the different user bases, breaking down the quantitative redundancies inherent in the arithmetic accumulation of users from different services and also, giving a realistic view of the overall impact of the activities on the whole of the citizens.

The geometric intersection between the catchment areas of the different publics of each individual service (that could be defined as the area of intersection between a catchment area of a service and another), once brought back to the last individuality, represents the precious fruit of the reduction of quantitative redundancies: it makes possible to reveal the manifold activities that every single user - really each person - leads back to itself.

By making use of tried and tested technologies, such as those used for Single Sign-On (SSO) procedures, you can easily set a logic of user transfer between a service and the other, allowing, as between communicating vessels, the transition from one service area to another, once the users had access to one of the several application platforms in use.

But if we pursuit more ambitious goals, through the use of less common technologies, it is possible to suppose the dynamic construction of a repository of individual identity that is higher-level compared to each of the user data bases related to the various service platforms, to which they refer as the authoritative source for user identity recognition (to express the Single SIgn On functionality, for example), but most of all, to preserve the complex and detailed mosaic of activities and transactions carried out by the individual user in each different area of service.

Bringing back to unity the identity information (that is building the digital identity that belongs to each user) and then bringing back to it all the information concerning the user

itself and those about his cultural fruition, new concrete opportunities to build innovative paradigms for communication begin to materialize.

Communicate with the Public of Culture

Therefore, is it possible to communicate in an innovative and effective way with the Public of Culture? Yes, it is. But only if we postulate a new approach to communication with users of libraries and cultural services.

We have seen that the steady growth of the range of services offered by CSBNO and the consequent progressive multiplication of communication sources (through traditional channels or trough the WEB), by this time contribute to trigger the need for a new system approach, that can make a real synthesis and aim to unity for public and institutional communication of our Consortium, also and above all, in a medium and long term perspective.

To achieve this goal it is necessary to remedy to the self-reference of each information channel used today (that are intrinsic to each different service scope), and also to remedy to the dissemination of information to a public that is often the same and is largely made up of insiders or however circumscribed to each individual service segment. The real goal is now addressing an audience composed of individuals, each recognizable and recognized in its own individuality. In other words, we need to control the situation described by David Weinberger as "digital disorder"[2]. According to this author, this situation would be a harbinger of greater knowledge and brings with itself the increase of the collective opportunities for information, even when the redundancy and the information excess tend to characterize the context of the communication: "there's no such thing as "too much" information", says Weinberger.

The new approach to communication should provide a new attitude towards the content of the communication itself and it should focus on the individuality of each person: we now want to force the cultural communication to evolve in the direction of the "learning systems", which are applications able to "learn" automatically from the user's behavior and from the choices made by the users while they are using libraries or cultural services.

The Learning systems and… the Library Science

The spread of the learners and the diffusion of the recommendation systems

Doing a search in Google, accessing Facebook, looking for something on Ebay or using Twitter or even Amazon, every day millions of people are unknowingly using the recommendation system technology, intelligent systems able to understand the needs of each user and bring the appropriate responses to every request. The comfortable and natural feeling that internet users experience when they can instantly find everything they are looking for, in a flash, or the immediacy and the natural affinity with the personal interests of everything that is found in a search, or the indubitable proximity between people who share relationships on social networks, but even more, the imperceptibility of the presence, are indeed the result of the efforts of those who design and build the learners and the recommendation systems.

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[2] Everything Is Miscellaneous: The Power of the New Digital Disorder / David Weinberger, copyright 2008

To go back to an official date, the use of this technology on a large scale began in 2009, year in which the world's bigger company in information technology, Google - now become the company with the highest capitalization of all time at New York Nasdaq - decided to give no more equal and universal answers to the searches of the internet users, and from that point forward, they begun to individualize and finalize the responses in a specific way for each of the Internet users, ushering in the era of the recommendation system and determining the start of an unstoppable development for this technology.

It 's hard to believe that Google's search engine is really able to recognize, to accommodate preferences and interests of millions of people, to respond really addressing to each one individually taken, but this is really the state of the art on the Internet. Today there's no digital platform, search engine or e-commerce site that does not implement the recommendation system technology, and now this technology constitutes the real base of the governance of the economic flows in digital economy.

As it's perceived, the WEB is thus the result of actions and mediations made by this specific technology which, in its expression, makes comfortable and cozy the ocean of information for each user. In other words, using this technology, the Internet universe is not a rough sea in which anyone could shipwreck in solitude, but it's rather a place that looks really as everyone would like it to be: full of friends who feel the same way and full of things that seem to be made for pleasure and interests of each of us.

It almost seems that a recommendation system operation mechanism is done on purpose to tickle that bit of narcissism that dwells in everyone, as if this technology want to gratify the correctness of individual choices, the enforceability of personal interests, the validity of the ideas, which are elected as a paradigm of the way the Internet shows itself. So, at this point, it is quite appropriate to say that the face with the Internet presents itself to each web user, is nothing but the reflection of the face of each of us.

The Machine Learners in Libraries and in Culture?

There are strong reasons underlying the fact that this technology (that makes possible the user experience on the internet and on the social networks) is not present in the world of libraries yet, carrying its overwhelming cascade of innovative services for users. And there's also the fact that no one speaks or knows much about it. The only hints of debate in the US context concerned the quite improper comparison between the librarian performance and the recommendation system performance in reference and really nothing much more than that.

If we want to explore the real reasons for this matter of facts, the first one could be the enormous amount of investment needed to produce research and development in this area: here we are on the top of artificial intelligence technologies[3] and the costs are not comparable to those the library sector is used to see, at least in our country. A second reason is intrinsic in the world of libraries as it's in the tradition and in the history of the library itself: to understand it we just want to investigate the parable of Google, in this case a real metaphor for library history.

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[3] Lomuscio A, Michaliszyn J, 2015, Model Checking Epistemic Halpern-Shoham Logic Extended with Regular Expressions., CoRR, Vol: abs/1509.00608

After spending nearly a decade in improving their algorithms for automatic indexing, and after stored and catalogued every resource on the WEB in their very large server farms, Google has finally decided that everything would be meaningless without a new, additional family of algorithms: the recommendation system, that is today the most valuable and the most secret Google algorithm, new generation learners able to bring to any web user exactly the information needed.

In the library world the reaction to the proliferation of information sources and, ultimately, of the information itself, year after year led to the development of increasingly sophisticated and effective cataloging methods and techniques, which were certainly capable of improving the access to information, but still remaining in the wake of what we might call, using the web giant parabola seen above, "The first phase of Google". In that phase, the real value and the concrete need of the approach "from the user's perspective" not yet occurred and recommendation systems and learners did not yet permeate the Internet, that will be later troubled by the management and the interpretation of big data.

Digital Dis-Order and Learners

Now, the time to introduce the technology of machine learning in the libraries and in the world of culture has come. The CSBNO intends to take the opportunity that its positioning and its evolutionary path offers to produce a new form of "digital order" in the universe of cultural communication to oppose the "digital dis-order" described by David Weinberger.

So, the individual identities of all the users coming from all kinds of cultural service - from the libraries to the painting courses, from musical concerts to theaters – that were entered several times in several different registries, once recognized and brought back to the real person, they may be analyzed in their expression and then they could become the pivot of a new way in digital communication for culture, able to build a new universe of services on personal measure.

With this in mind, the information that are in the intersection edges between areas of different services, represent the greatest added value information when the goal is to learn as much as possible about the individual characteristics of users and to define the profile in cultural fruition of each of them. The algorithms inside a learner ad hoc designed, will follow day by day the evolving of the preferences and interests of each user and then will learn – directly from the user behavior or through digital transaction leaved attending a concert hall or a theater - how to better satisfy the personal cultural needs and how to communicate suitably and consistently with each user.

Most of all, we must avoid the early imperfections in the first learner when applied to recommendation systems (for example, after an acquisition of a certain product, they began to recommend continuously and obsessively the same product, or at least, a similar product, more and more over time…). We have also to keep away from the defect of the excess of selectivity that could be found in certain digital marketing that prefers to make the users remain within a well-defined perimeter of interests and preferences because this means immediate economic benefits, but also, unfortunately, the closing of the horizons of knowledge and of relationships[4].

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[4] Pariser, Eli: The Filter Bubble: What the Internet Is Hiding from You, Penguin Press (New York, May 2011) ISBN 978-1-59420-300-8.

These are the outlines of an intelligent technology, able to understand, learn and satisfy the personal interests and the preferences of each user in cultural services, but also able to make the users evolve with new suggestions beyond their limits and again, able to lead them to cultural service areas not yet reached.

The Issue of Classification and the Role of Learners

Then the need is to escape the low intelligence of learners designed for commercial purposes and to obtain a new form of intelligence in a learner suited to the cultural field but this really means to open new routes in research and development for these technologies.

As already seen, the biggest imperfection of a traditional learner is inherent in its more or less immediate profit objective, so the main benefit we could have in the implementation of this technology lies just in changing its economical target to a cultural target: ranging from art to literature, from movies to music, allows to convert to value the main area of difficulty for the learners, that is, their ability to understand and learn how to consistently classify the information available, and then draw consequent behavior.

There are at least five main areas in research and development in machine learning, that have their origin in five disciplines that were completely different (neuroscience, evolution, psychology, physics and statistics), each with its own school of thought, each with its own strengths and weaknesses. All of them collide with the need to produce an organization in the information on a classificatory basis, to come to understand the real meaning of an user action, even the meaning of a single click. To classify is the most difficult and complicated process for a learner, even more when the process itself imposes to the learner to build a classificatory ontology from the information available, in the case there's no classification to reference to, nor an ontology to guide it[5].

And what could happen instead, if the ontology and the classification apparatus to feed the learner already exist? And what else if these tools had been refined over decades and had now reached the highest level of precision and keenness?

A Comparison of Classificatory Ontologies

If there really was a classification system, even with numerical correspondences of decimal type and also recursively for all its classes, and if we could take it as a starting point to teach a learner, which is specifically designed for culture, then we would have found the key… even better, if there were different classification systems developed and defined for each of the specific areas of cultural expressions, It would be perfect.

In this case it would be possible applying a specific learner to a specific disciplinary field of culture and then place it in the best operating conditions to learn from the preferences, the interests and the activities of each of the users of cultural services. These learners would be specifically "clustered" to better adapt to their specific disciplinary field and so they will produce more consistent results, that would be predictable and measurable inside that knowledge area.

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[5] The Master Algorithm. How the quest for the ultimate learning machine will remake our world / Pedro Domingos copyright 2015

Every librarian in the world knows that these classifications exist and that they are used in most of the libraries and cataloging centers around the world. So, are there any reasons not to use the Dewey Decimal Classification as the backbone of knowledge cluster onto the learner may work? And even more: the library science offers today several classifications that have been internationally consolidated and meet the categorization requirements of literary, music and film genres and over the years multitudes of multilingual thesauri had been encoded according to ISO standards [6], in order to represent complete epistemological apparatuses.

Some IT enthusiasts acted too soon the "de Profundis" for these traditional tools of the library science but despite of this, their could live their second youth in machine learning, area in which they could express new capabilities in structuring the classification systems for learner. Applying to a specific learner a specially designed classification system (for example based on literary and music genres, or even on a Dewey Classification segment), we can get useful algorithms able to learn typical differences and peculiar similarities among these subdivisions.

On the other hand, there are classifications sufficiently structured and consolidated in fields other than the library science, such as in publishing as well as in electronic commerce: what would happen if we would try to establish specific intersection system between the classifications coming from the library science and those born in other fields of human activity? If two different classificatory ontologies, belonging to different fields of knowledge but describing the same cluster - that is, the same specific phenomenon, for example the publishing market - are compared, they will identify stable ties between their classificatory ramifications, then they will create well controlled communication channels between different worlds, with extraordinary results, potentially.

Let's take for example the Dewey Decimal Classification and the Commercial Editorial Classification standard[7]: both describe the publishing market, from divergent points of view, with different purposes and with very different tools, focusing on specific segments of knowledge and deepening or vice versa, passing more easily on other. Establishing relationships between each of the classes Dewey and the corresponding class in the Commercial Editorial Classification, we can shift and move between them, finding new value in the increased depth ability in one or in the other classification and in both ontologies.

Extending this reasoning to every possible stable and standard classificatory structures, we could be able to navigate through the categorizations: for example starting from a cultural event to get to a corresponding literary genre, from a music concert to a peculiarly related ebook, from a theater play even to a handicraft product...

The architecture we are describing begins now to appear step by step more clear: we apply a peculiar learner, specifically made expert in its area, to each of the classificatory structures

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[6] ISO 25964-1:2011 Information and documentation -- Thesauri and interoperability with other vocabularies -- Part 1: Thesauri for information retrieval. ISO 25964-1:2011 is applicable to monolingual and multilingual thesauri. ISO 25964-2:2013 Information and documentation -- Thesauri and interoperability with other vocabularies -- Part 2: Interoperability with other vocabularies.

[7] The BIC Standard Subject Categories & Qualifiers scheme is the standard classification scheme for the UK book trade and other English language markets. BIC Standard Subject Categories - Version 2.1, copyright Book Industry Communication (company registered in England and Wales with number 2589185) and Nielsen Book Services Ltd.

chosen and then we set up the relationships between these classification systems we intend to compare.

Each learner will carry out its work by identifying the scope of the classification in which to place every particular information belonging only to that knowledge field and just for these placements, they will establish channels to communicate between several classification and ontologies.

A Metalearner to serve the Culture

This new architectural system seems to respond quite perfectly to the project needs but its efficiency could be increased again, introducing a state of the art technology, i.e. the "Meta-Learner". In fact, if we apply an additional learner able to precede to the general superstructure coming from the coalescence of the classificatory ontologies, then we'll have a new powerful tool able to manage the deepening levels of disciplines in the various structures, in an autonomous way[8].

The proceeding downwards (deepening the understanding of the information content), or upwards (towards the generalization of the topics), along the whole classificatory structure will become possible and will also allow to cross the initial area of interest up to involve the neighboring areas of interest. And this could happen not only in the same context of the original information classified by the dedicated learner (for example an essay of plant taxonomy), and without using the linguistic proximity - that often get results really too naïve - but even in different segment of human activities (for example, the conference of a evolutionary biologist).

The apparatus that we are describing could be able to evaluate itself using the feedback coming from users and it would soon take the role of indispensable joint system between libraries and cultural activities involving citizens in a library cooperation area. And even more, this system could boast of the assistance by a "social learner", a tool that can learn the actual level of approval and liking (for the cultural activities done or for the books read after the recommendation of the Meta-Learning System) and then provide to the dissemination.

New Paradigms for Cultural Services

New scenarios for cultural communication are opening up, and they're gathering together the traditional library science with the most advanced area in artificial intelligence and most of all the machine learning. It might seem a paradox, but the large chronological gap existing between the libraries world and the companies acting in digital economy, is filled in only one step, placing libraries at the forefront of innovation and quality of service.

Now we can be really able to stimulate the patron libraries and the cultural services users by managing the information automatically and intelligently and by communicating appropriately and effectively in the best way, for the right things, for each individual person, breaking down this way the barriers between the various segments of cultural expression.

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[8] The Master Algorithm. How the quest for the ultimate learning machine will remake our world /Pedro Domingos copyright 2015.

At the same time we can strengthen the traditional activities proper of the librarianship: for example imagine how thorough and targeted to the own particular interests of a user can be a bibliography specifically created by the meta-learner, making use of all the classificatory ontologies available, each one able to complement the specificity - and why not, the defects or the shortcomings - of the other...

A New Form of Sustainability for Cultural Services

Technologies and tools like those we described are actually the reason of success of the digital economy and they already triggered planetary economic flows with impressive size, regardless of the limits that we tried to analyze and fill with appropriate mix of automatic systems technologies and traditional library classification tools.

The real "risk" is that our architecture could be extremely effective, more precise and flexible than those developed by the Web Giants, because of its being specifically designed for the cultural sphere and not for a general application in e-commerce. But if this is the case, we could really imagine a brand new strategic positioning for the library in the whole economy of culture and in cultural production in a broad sense.

As well as the library has over time assumed the role of "cultural hub" in a natural and almost unpredictable way and without any concrete planning actions, so this role will be now strategically strengthened if projected into "the cultural marketplace" with the new kind of information and communication management tool seen above. This new approach will strongly identify the library because of its evolving in the same tradition line of the librarianship but will also create the digital pivot of new economic flows directly generated by user cultural fruition.

At this point wouldn't be difficult for libraries to control the revenues coming from user transaction fees related to the advertising for a musical concert or a drama, or even coming directly from the purchasing of an e-book from the digital platform… It might even be possible to manage dynamically some predefined sustainability levels according to thresholds set by learners adapted to grasp the real time transaction amount on the network ... but this might already be the topic for another article.