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# Intangible cultural heritage webs: Comparing national networks with digital methods

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## Abstract

The 2003 United Nations Educational, Scientific and Cultural Organization (UNESCO) Convention for the safeguard of intangible cultural heritage (ICH) is addressed to the States and assigns them several tasks. However, no State can accomplish all these tasks without mobilizing a wide network of institutions, associations, and individuals. The national ICH policies intersect, overlap, and often transform the existing relationships among these actors. This study aims at comparing several national networks (France, Italy, and Switzerland) involved in the implementation of the 2003 UNESCO Convention to highlight national trends and specificities. The analysis has employed an innovative methodology based on digital methods and is aimed at exploring the landscapes of websites dedicated to the intangible heritage. By analyzing the hyperlinking strategies of ICH actors, we have identified the specific web topology of each nation, showing which actors are central and peripheral, whether clusters or cliques are formed, and who plays the roles of authority and hub.

## Keywords

Cartography, cultural policy, digital methods, intangible cultural heritage, Internet, social networks, states, UNESCO, web

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## Introduction

In 2003, recognizing the risks coming from globalization and social transformation, the United Nations Educational, Scientific and Cultural Organization (UNESCO) decided to endorse the label intangible cultural heritage (from now on, ICH)<sup>1</sup> to protect “the practices, representations, expressions, knowledge, skills—as well as the instruments, objects, artifacts and cultural spaces associated therewith—that communities, groups and, in some cases, individuals recognize as part of their cultural heritage” (art. 2, Convention). By issuing the 2003 *Convention for the safeguarding of the intangible cultural heritage*, the UNESCO acknowledged the importance of oral expressions and traditional practices as well as the urgency of their preservation.

To assure such preservation, the Convention established the need for an international system of safeguard, analogous to the one that, since 1972, protects the tangible heritage through the *Convention Concerning the Protection of the World Cultural and Natural Heritage*. Similar to the previous “World Heritage Convention,” the 2003 ICH Convention is explicitly addressed to the States and assigns them several tasks, such as “ensure the safeguarding” (art. 11); “draw up ... inventories” (art. 12); “designate or establish one or more competent bodies ... foster scientific, technical and artistic studies ... adopt appropriate legal, technical, administrative and financial measures” (art. 14); support education, increase awareness, and capacity-building concerning ICH (art. 15); ensure the participation of communities (art. 16); submit requests of international assistance (art. 23); and periodic reports on the implementation of the Convention (art. 29).

While granting to intangible practices and expressions the same protection accorded to material legacies, the UNESCO experts recognized that the two types of heritage require radically different preservation systems.<sup>2</sup> For instance, intangible practices are impossible to preserve simply through the State-centered approach that the UNESCO has adopted for cultural properties, such as monuments and sites. Intangible heritage is, by definition, a living heritage, a heritage that is nurtured by the communities that initiated it and continue recreating it. Preserving the intangible heritage means primarily entails assuring life and persistence of such communities of practice, a goal that calls for bottom-up and decentralized approaches (Blake, 2008).

As a consequence, although national States remain the first addresses of the UNESCO, the 2003 Convention recognized that numerous other actors play an irreplaceable role in the preservation of oral traditions and cultural practices (Kurin, 2004). ICH is created and sustained by vast and complex networks of institutions, associations, nongovernmental organizations (NGOs), groups, and even single individuals. *To be sure, no State can accomplish all the tasks imposed in the Convention without involving a wide network of actors.*

All the States that ratified the Convention have coped with the difficulty of building a preservation system capable of involving all the actors that contribute to safeguarding the intangible heritage. The emergence of a new governance to manage ICH has intersected, overlapped, and often transformed the existing routines, affecting the relationships among the different actors in charge of cultural heritage, with specific dynamics in each country. As observed in this study, in each State, the structure of the ICH network tends to mirror the national approach to ICH and its management. In this study, we will

explore a few national ICH networks, trying to understand who the main actors are and how they interact to create an (more or less) integrated system of preservation.

However, such type of investigation is difficult for at least four reasons:

1. ICH networks are wide and widespread. They comprise dozens, sometimes hundreds, of actors spread across several regions and sometimes across several countries.
2. ICH networks are heterogeneous. They gather actors coming from different universes, from amateur associations to international institutions, from cultural establishments to economic enterprises, as well as from traditional experts to academic scholars. The connections that bound these actors are not less varied, spanning from counseling to funding, from collaboration to competition, as well as from scientific to market interests.
3. ICH networks often embrace different languages—not only different national languages but also different dialects and technical jargons.
4. The construction of a national ICH preservation system is a relatively new phenomenon and one that has not yet been thoroughly studied.

These four obstacles make it difficult to reconstruct even the smallest ICH networks, let alone comparing different networks. How to identify the myriad of actors engaged in the preservation of oral expressions and cultural practices? How to follow their multiple relations across national and linguistic borders? How to reconstruct a web of formal and information interactions in constant transformation? As answering to these questions with traditional research methods is difficult for the reasons explained earlier, we decided to turn to *digital methods*.

## Methodology: the digital methods

By “digital methods,” we refer to a series of techniques designed to explore the traces of online interactions as source of information on social phenomena.<sup>3</sup> The first evidence of the potential of such methods has been provided by the famous Google study on flu epidemics in the United States.<sup>4</sup> By screening the queries addressed to their search engines between 2003 and 2008, Google’s engineers devised an indicator that not only obtained an amazing .97 correlation with the data of the Centre for Disease Control data but also did it with a couple of weeks of advance. Published by *Nature*, the Google flu study convincingly demonstrated that online traces can be used to investigate offline phenomena (Ginsberg et al., 2009).

Besides the analysis of search engine data, many other digital methods entered the toolkit of social sciences in the last few years (Venturini and Latour, 2010; Lazer et al., 2009).<sup>5</sup> In this study, we will draw on “web mapping,” a method that proved particularly helpful in tracing complex social networks. The idea behind such method is that hyperlinks can be used as proxy of social connections. Despite the marginal cost required to create a hyperlink, it has been repeatedly observed that Web authors tend to be extremely careful in establishing connections; in particular:

1. They preferentially cite websites that share their thematic or social focus;
2. They do not cite websites that, although socially or thematically close, have opposite viewpoints.

If the first behavior is not surprising, the second is more intriguing. People and groups having opposite position tend to ignore each other on the web: They do not cite negatively; they do not cite at all.<sup>6</sup> The result is that the web is not randomly organized. Linking their discourse to other online discourses, the users establish hierarchies and clusters (Gibson et al., 1998). Similar to the Internet, the web is not a single network but a network of networks, a graph where densely connected zones are separated by relatively empty spaces. Most of the time, these territories correspond to thematic communities: clusters of people gathering around interests and viewpoints. The hyperlinks connecting the websites dedicated to the ICH can, therefore, reveal much about the networks of actors concerned with ICH preservation. In other words, by knowing which sites are hyperlinked online, we can infer which actors are connected offline.

Our analysis went through four successive steps:

1. First, we identified, in each country, the main actors related to intangible heritage. In general, we started from websites of national agencies in charge of intangible heritage (such as Ministry of Culture and the UNESCO national commission) and from the websites dedicated to the items inscribed on the UNESCO lists. Then, using several automatic and manual crawlers (especially, the Issuecrawler<sup>7</sup> and the Navicrawler<sup>8</sup>), we explored their websites keeping track of all the links that they contain, to discover other interesting websites and build the networks of connections among them.
2. Second, we categorized each website according to the type of actor it represents and the scale at which the actor is positioned:
  - With regard to the type of actor, drawing on the information available on the websites, we distinguished among institutions (governing bodies at international, national, or local level), associations (profit or nonprofit organizations), and individuals (single individual or group of individuals with no formal organization).
  - With regard to the scale of actors, drawing on the information available on the website, we tried to define the focus of the activities of the actors: international (if the activities exceeds the boundaries of the country), national (if the activities concern the whole country or several areas of it), and local (if the activities concern a specific region or city).<sup>9</sup>
3. Third, we analyzed and visualized the resulting networks through a graph manipulation tool (Gephi<sup>10</sup>). By analyzing the linking strategies of actors, we tried to identify the specific topology of each national preservation network, showing which actors are central and peripheral, if and how websites are gathered into separated clusters, and who plays the role of authority in the networks.
4. Fourth, to enhance the readability of our networks, we used a script developed by the *Sciences Po médialab* (<http://www.medialab.sciences-po.fr/>) to turn our graphs into heatmaps.

Subsequently, we will discuss several graphs and heatmaps representing the network of ICH actors in three different countries: Italy, France, and Switzerland. To interpret the following images, it is important to know the design rules that have been followed in drawing them:

- The position of the nodes is significant and depends on their connections. Unlike geographical maps, scatter plots, and other Cartesian representations, the space of graphs does not preexist to the data that it contains and the position of each point does not, in itself, provide any useful information. Still, the global disposition of points is not meaningless. All the networks that we have presented in this study are spatialized according to a force-vector algorithm called ForceAtlas2 (Jacomy et al., 2011). Such algorithm works by attributing a repulsive force to nodes and an attractive force to links. Once the algorithm is launched, it changes the disposition of nodes until reaching the equilibrium that guarantees the best balance of forces. Such equilibrium guarantees that if two nodes are close in the specialized graph, they are connected directly or indirectly (connected to the same set of nodes).
- The size of the nodes is used to rank them. In particular, we chose to rank node by their “visibility” in the network, computed as the number of links that they receive from other nodes (their “in-degree”). In the following graphs, the size of each node is, therefore, proportional to the number of websites that cite it.
- The color of the nodes is used to represent their category. As stated earlier, websites have been categorized according to their type (blue points represent institutions, green points represent associations, and red points represent individuals and groups) and their scale (red points represent international actors, blue points represent national actors, and green points represent local actors). The two color codes are consistent throughout all the graphs.
- As the positions and colors of nodes in our graphs express the connectivity and categorization, respectively, the presence of many nodes of the same color in the same region of the graph is meaningful. It allows knowing whether nodes cluster by category (i.e. if nodes of the same color are more connected among themselves than with nodes of a different color) and infer the relative position of different categories (i.e. which categories are central and which are marginal). To make this type of information more readable, we employed heatmap visualization. To obtain such visualization, each node is represented as a source of light. A colored light emanates from the center of each node with a color, which depends on the node color, and an intensity and irradiation that are proportional to the node size. The result is an image where different areas are colored according to the predominant type of nodes, and lighter areas correspond to regions of the graph with a higher density of nodes.<sup>11</sup>

Before moving to the analysis, as a disclaimer for the rest of this study, it must be underlined that the hyperlink networks do not always match the state of offline relationships. On one hand, websites are not always up to date. On the other hand, hyperlinks in different sections of a website may have different meanings that our method is incapable of distinguishing (e.g. we do not differentiate between links in the news, those in the

partners' page, and those in banners). Yet, although web mapping cannot provide an exhaustive description of the ICH networks, it may suggest interesting research directions and provide discussion ideas.

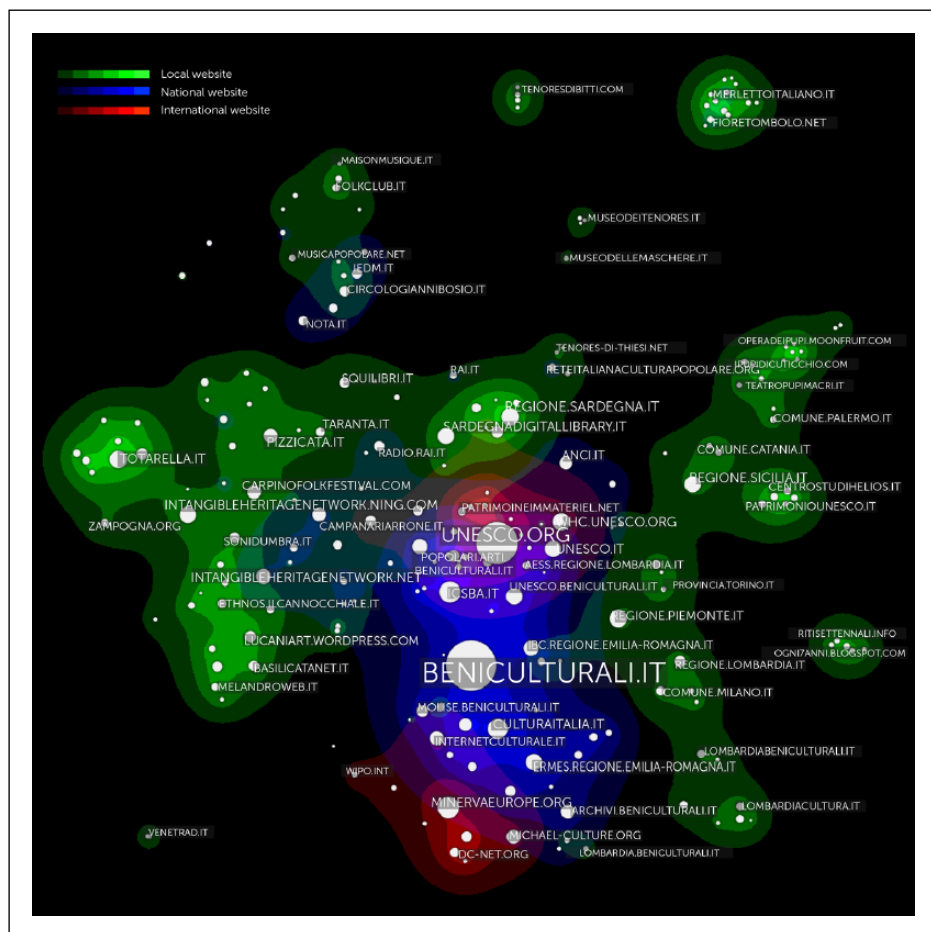
## Italian ICH web

Starting from the websites of the Ministry of Culture (<http://www.beniculturali.it>), the National Commission for UNESCO (<http://www.unesco.it>), and several websites related to Italian items inscribed on the UNESCO list,<sup>12</sup> the analysis identified a network of 218 nodes and 802 connections. Such network has a relatively centralized structure, and the center is occupied by national (24.5% of the nodes) and international (9%) websites. The majority of the actors, however, operate at a local scale: regional bodies, urban organizations, and even actors based in little villages (66.5%).

The network was observed to show a relatively low density: Around the central core (comprising the most visible nodes), the other actors organize independently occupying the margins of the network (see Figure 1). As can be observed in this figure, the central group, mainly comprising institutional actors, is surrounded by more or less interconnected groups of local actors. We can identify, for example, some geographic clusters, such as Sardinia's websites (mostly related to *The Canto a tenore* and occupying the top of the graph), Sicilia's websites (mostly related to *Opera dei Pupi* at the right of the image), and Lombardy's websites (not related to a specific item, at the bottom right of the image). It is also possible to note several thematic clusters: websites related to lace (a dense and separated cluster in the top right corner of the image), traditional dances (*pizzica* and *tarantella* at the left of the image), or the preparation of a candidature (such as 7-year ritual of penance in honor of the Assumption, a small cluster at the middle right of the image).

With regard to the type of actor (see Figure 2), institutional actors (38% of the nodes) clearly dominate the network for their position and visibility. However, several clusters of associative actors (43%) can be identified, that is, the cluster at the top left, which includes associations focusing on folk music, and at the right, the cluster of the *Opera dei Pupi* associations. Clusters of individual actors (19%) are also visible at the margins of the image, that is, the actors related to lace (*merletto*), *taranta*, or *pizzica*. Looking closer, two main groups can be identified. In the center, governing bodies that are promoting the ICH Convention at international, national, and local levels can be observed. On the margins and particularly on the left, we can find an equally noteworthy group of associations and individuals that strongly invested in ICH preservation by starting new projects or using the label ICH to give legitimacy to existing preservation initiatives.

The websites of the Ministry of Culture and the UNESCO are by far the most visible nodes in the graph (the ones receiving most of the hyperlinks). The very central position of <http://www.unesco.org> (linked not only by national agencies and local governments but also by independent projects of safeguard<sup>13</sup>) is particularly significant. Although the ICH Convention was approved in 2003 and enforced on 20 April 2006, Italy ratified it only in 2007 and the Italian government very recently started to organize the ICH safeguard actions at a national scale. At the two first nominations rounds (2009 and 2010),

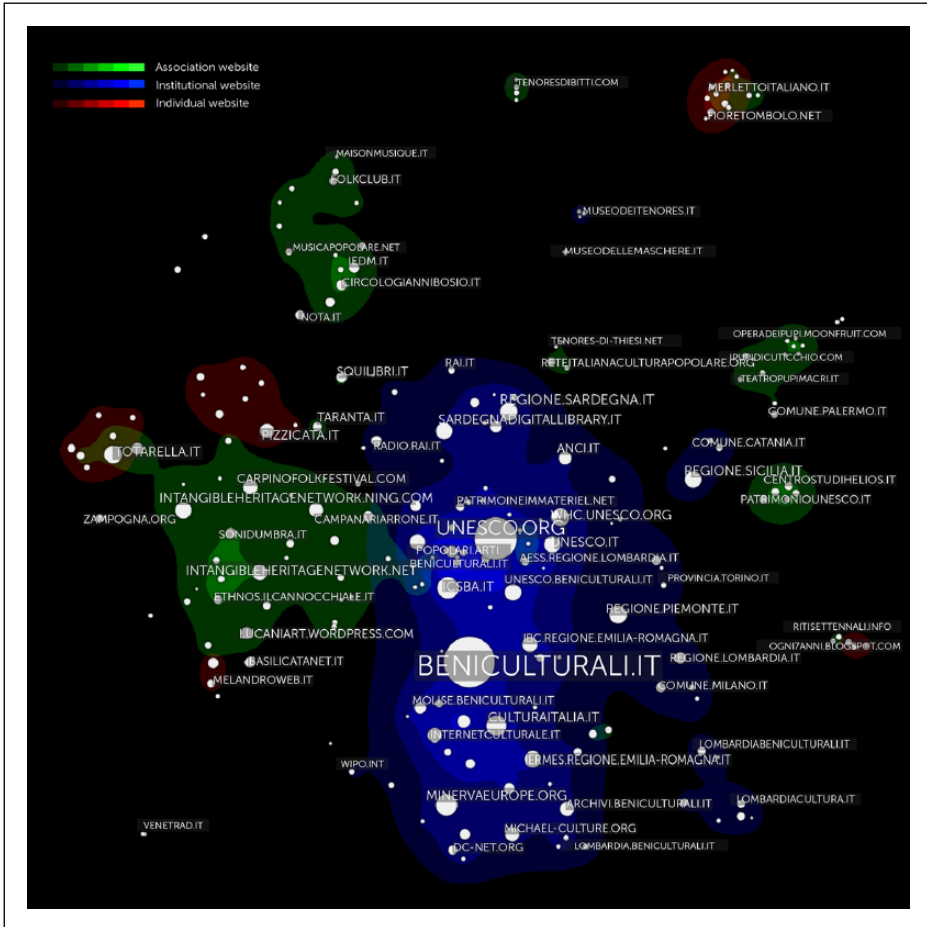


**Figure 1.** Heatmap of the Italian network of the ICH websites (colored by scale).

Italy did not submit any proposal,<sup>14</sup> and, until now, there is no Italian item inscribed on the UNESCO lists (except the items formerly proclaimed Masterpieces and incorporated into the ICH list in 2008). Nevertheless, the multitude of connections between *unesco.org* and several Italian websites show the generalized interest toward the Convention.

Since 2003, several initiatives (emanating from private and public actors, *amateur* and professionals, associations and institutions, as well as individuals and groups) started to talk about the ICH. Besides the rare official declarations on institutional websites,<sup>15</sup> the label ICH appeared on numerous websites: from folk manifestations to ethnographic research and from craft production to oral cultures. As a consequence, web mapping allows effective representation of the unstable and fragmented scenario of the Italian ICH safeguard system, where the initial latency of national bodies favored the emergence of various peripheral projects.



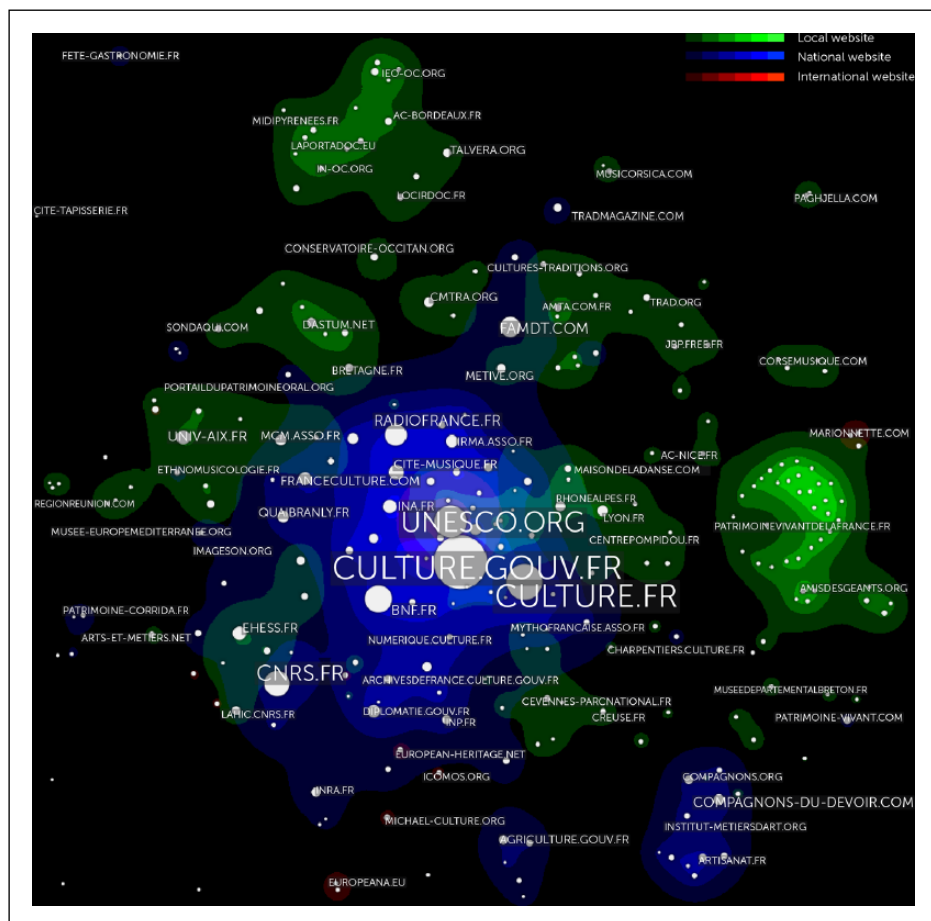


**Figure 2.** Heatmap of the Italian network of the ICH websites (colored by type).

**French ICH web**

The analysis of ICH in France started from the website of the National Commission for UNESCO (<http://www.unesco.fr>), the website of the ethnology mission of the heritage direction (<http://www.culture.gouv.fr/mpe/>),<sup>16</sup> the institution in charge of the “Inventory of inventories of intangible cultural heritage” in France, and the very recent portal *Patrimoine vivant de la France* (<http://www.patrimoinevivantdelafrance.fr/>) created by the Ministry of Culture to promote ICH at a national scale. Websites related to the 10 French items<sup>17</sup> already inscribed on the UNESCO lists have also been taken into account. The network consists of 264 nodes and 885 edges.

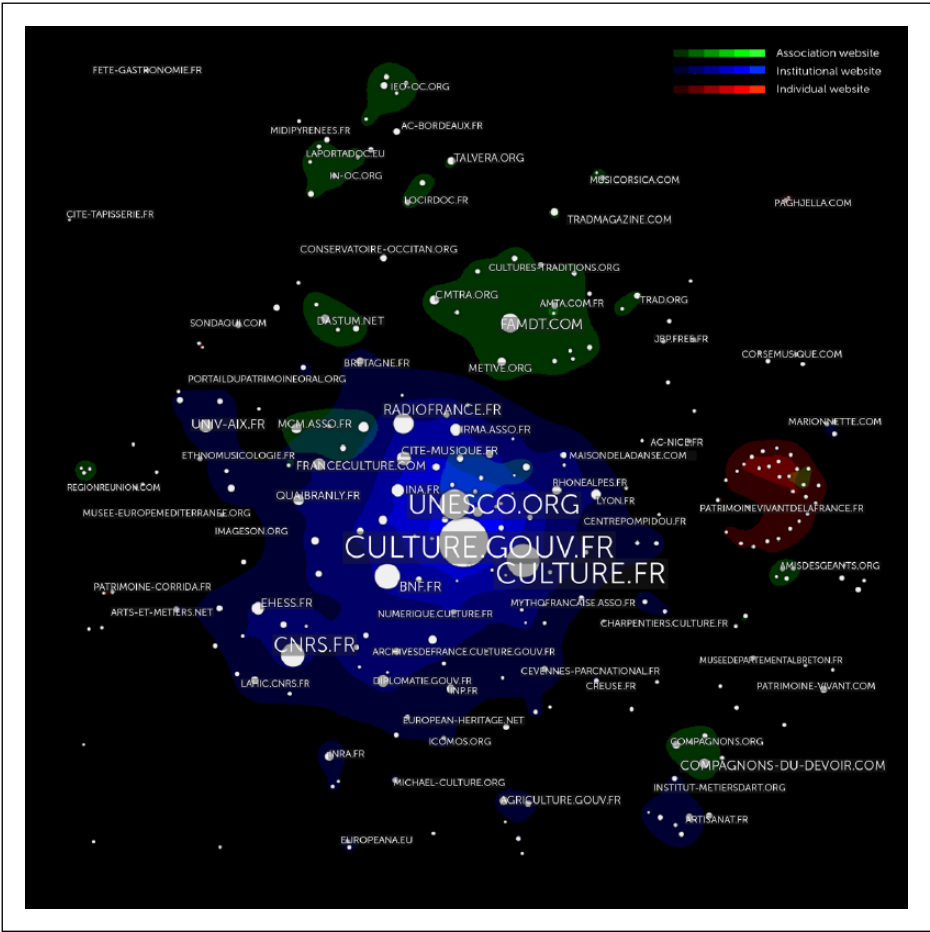
With regard to the scale of activity (see Figure 3), the gap between the quantity of local nodes (the green shapes on the heatmap) and the weight (measured as the number of incoming and outgoing links) of national actors emerges at a first glance. Although



**Figure 3.** Heatmap of the French network of the ICH websites (colored by scale).

national nodes are only 30% (against 65% of local and 5% of international), they are clearly the most connected, not only as authorities (target of most of the incoming links) but also as a hub (origin of most of the outgoing links—for example, see <http://www.patrimoinevivantdelafrance.fr>).

In particular, the Ministry of Culture, with its institutional website (<http://www.culture.gouv.fr>) and its informational portal (<http://www.culture.fr>), is the undisputed center of the network and is surrounded by several national branches with different territorial or thematic competencies that extend the Ministry's action to the whole graph. The international website of the UNESCO (<http://www.unesco.org>), while remaining one of the authorities of the graph, does not seem to play a key role as in the Italian case: The relation between local and international actors is generally mediated by national institutions. Indeed, once ratified in the Convention in 2006, the French Ministry of Culture very actively started the implementation through two types of initiatives: the construction of



**Figure 4.** Heatmap of the French network of the ICH websites (colored by type).

national inventories (and the identification of the existing inventories) and the preparation of nomination files to be submitted to the UNESCO. This signifies that numerous new projects (with new websites) started under the aegis of the Ministry and several existent projects led by local institutions and associations were enclosed.

This centralized structure, typical of the French cultural system, has many effects on the French world of intangible heritage. First, there is a similarity between the arrangement of groups per scale of actor (with the central group of national actors) and per type of actor (with the central group of institutions; see Figure 4). Conversely, it is also important to note that the identification of the groups on the margins of the network is quite difficult (except for the network generated by the portal *Patrimoine Vivant*, which cannot be considered as a real cluster of actors but simply as a technological artifact<sup>18</sup>). Both in the graph per scale and per type, actors are positioned in relation to the center rather than

to each other. The result is a structure where local associations and institutions are mainly related to the national level and individuals are dispersed all around.

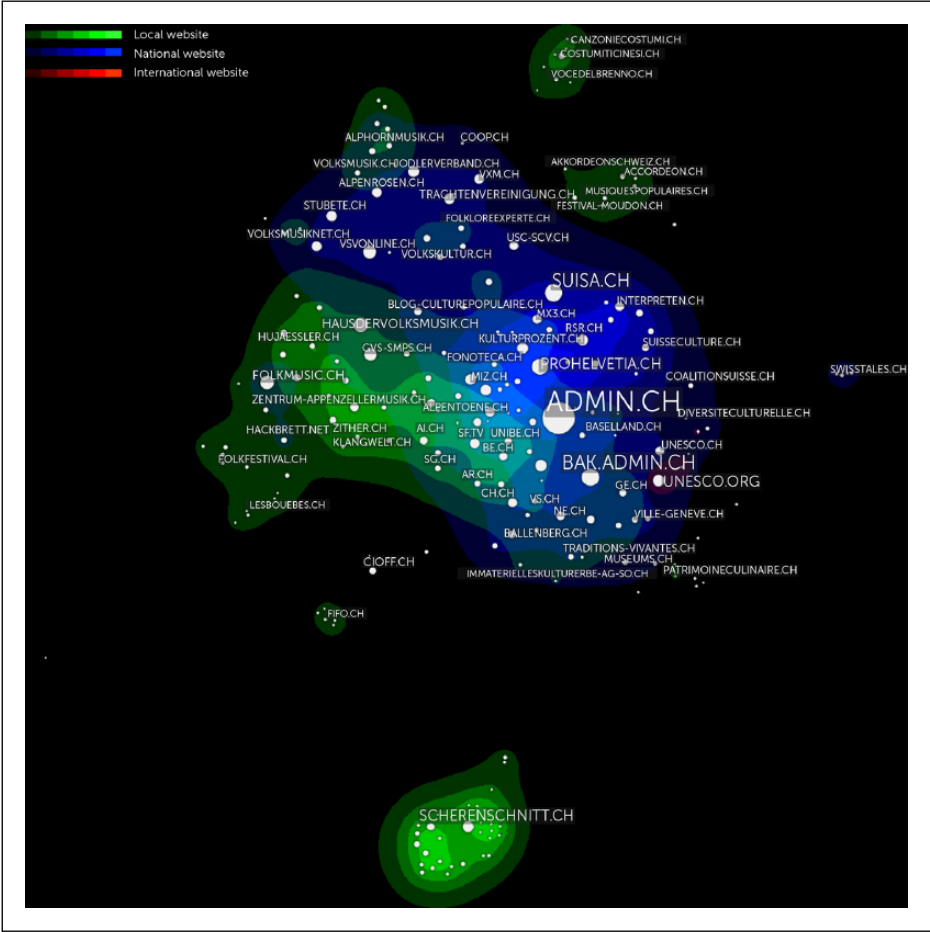
Another interesting peculiarity of France is that the importance assumed by the institutions is more directly related to the Ministry, such as museums, libraries, and archives (i.e. <http://www.bnf.fr>, <http://www.archivesnationales.culture.gouv.fr>, <http://www.archivesdefrance.culture.gouv.fr>, <http://www.quaibranly.fr>, etc.). The presence and strength of this type of actor may reveal an approach to intangible heritage, more oriented to conservation, inventorying, and communication than to “capacity-building” in the communities, as recommended by the UNESCO. Also, the research and education institutions seem to be fairly influential in the French map (especially, Centre National de la Recherche Scientifique (National Center for Scientific Research) [CRNS]). Not only several research laboratories are involved in the safeguard and inventory activities, but training schools (especially related to handcraft) and education institutes (especially related to traditional music) are also involved in the enhancement of the practices of heritage transmission.

Interesting insights can also emerge from the observation of groups by type of actor. As observed, institutions (45%) play the role of both authorities and hubs by guaranteeing the connection of the network, while associations (35%) and individuals (20%) are interconnected with weak peripheral relations and constitute few thematic and geographic groups in the graph. Among them, the few that show a densely connected texture are defined by the overlap of two types of grouping, thematic and geographic. Possibly, groups such as the Occitan community (the green group on the top of the map per type), which not only share a geographical location but also share an independent culture and language, may find the force in their cultural diversity to emancipate from the center in the graph.

Thus, these maps clearly show that the label ICH has spread in the French web in an organized and controlled way, mainly through the action of national institutions. While in the Italian network several kinds of groups organizing themselves (not always coherently with the UNESCO’s rules and definitions) were recognized, the French network appears more homogeneous. Although new websites related to the ICH have appeared and the category of ICH has absorbed several existing websites owing to the new inscriptions in the UNESCO list (see the cluster of websites related to *Compagnonnage*<sup>19</sup> at the bottom of the graph), the network has grown around a unique nucleus, leaving little space for clusters and groups autonomous from the center.

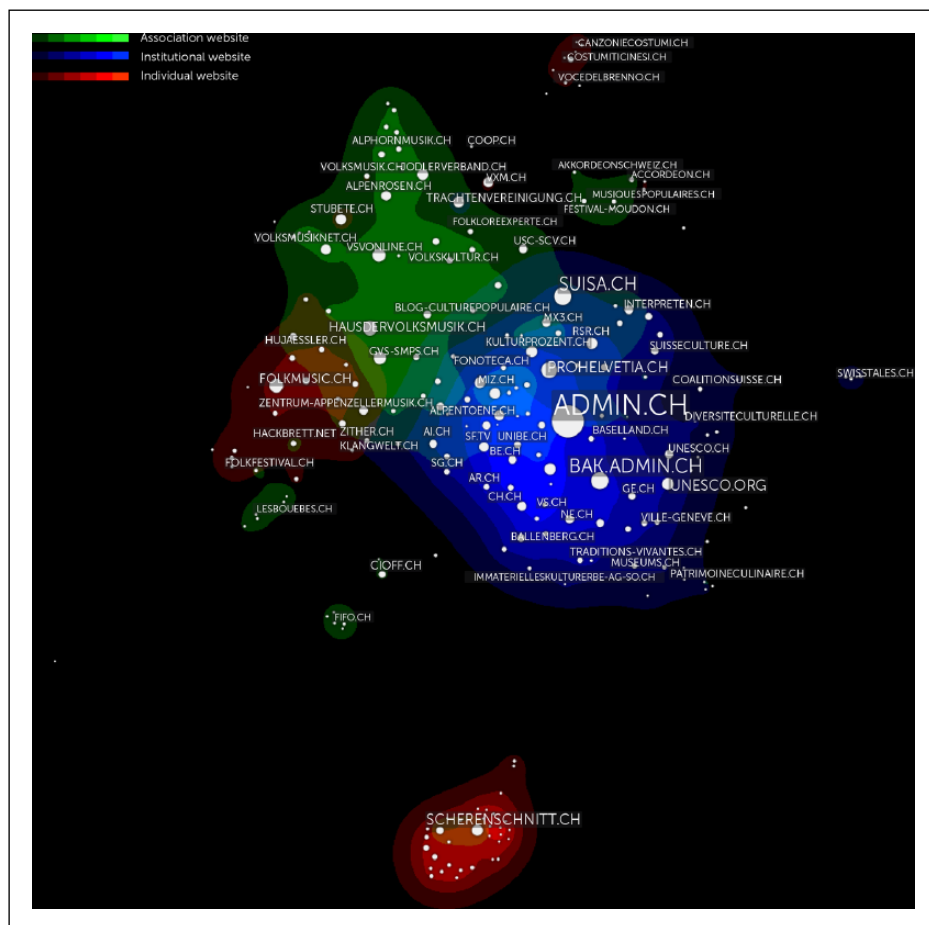
## Swiss ICH web

The analysis of the ICH network in Switzerland started from the website of the National Commission for UNESCO (<http://www.unesco.ch>), the website of the official national inventory (<http://www.traditionsvivantes.ch>), and the website of CIOFF Switzerland (International Council of Organizations of Folklore Festivals and Folk Arts traditional), which created a directory of intangible heritage in Switzerland some years ago (<http://www.cioff.ch>).<sup>20</sup> The analysis of this network has been particularly complex because of the multilingual nature of the country. Different domain names proposing different linguistic versions of the same website have been aggregated in a unique node (e.g. see <http://www.traditionsvivantes.ch> and <http://www.lebendigetraditionen.ch/>).



**Figure 5.** Heatmap of the Swiss network of the ICH websites (colored by scale).

The network consists of 215 nodes and 1159 connections. The high density of connection in the graph makes it difficult to identify separated clusters; yet, some interesting insights can be pointed out. With regard to the scale of actor (see Figure 5), the marginal role of international actors (6%) very clearly emerges. Not only the international nodes are dispersed in the graph, but even the international website of the UNESCO is marginal, when compared with the national and local nodes (at the bottom right of the graph). Conversely, the distribution of local nodes (62%) and national nodes (32%) is more balanced than that in other countries. While it is possible to identify a core group of national institutions (around <http://www.bak.admin.ch> and <http://www.admin.ch>, the official sites of the Swiss Confederation), several national actors are also included in the local groups and vice versa, generating a decentralized structure. As a result, in the scale heatmap, the blue area (national) and the green area



**Figure 6.** Heatmap of the Swiss network of the ICH websites (colored by type).

(local) show several overlapping areas. This phenomenon may be owing to the cantons organization of Switzerland (see the overlapping area around the points *be.ch* of the canton of Bern, *ar.ch* of Appenzell Outer Rhodes, and *ai.ch* of Appenzell Inner Rhodes), but it is also an evidence of a democratic network open to local actors (see the overlapping area of nodes related to folk music).

This openness is also confirmed by the distribution of nodes per type (see Figure 6), which is remarkably different from other countries. First, although (similar to other countries) the Swiss network presents a central group of institutions (32%), associations (37.5%) and, notably, individuals (30.5% against 19% in the Italian network and 20% in the French network) are also very active. As revealed by the heatmap representation, the network shows a more balanced presence of various types (the three categories cover areas with similar size).

Second, although the nodes belonging to the same category tend to link each other, they are also connected to the nodes of other categories. As a result, the colored areas are clearly overlapping in the heatmap. Third, authorities are not only institutions (<http://www.admin.ch>, <http://www.unesco.ch>) but are also associations (<http://www.vsvonline.ch>, the Swiss association of folk music) and individuals (the blog [folkmusic.ch](http://www.folkmusic.ch)). In particular, we can note the weight of the website SUISA, the Cooperative Society of Music Authors and Publishers (<http://www.suisa.ch>). It is not only one of the most influential and central nodes of the network but is also one of the crossing points between local and national groups as well as between institutions and associations.

The distinctive overlapping of national and local actors is a key feature of the Swiss ICH system. For example, let us consider the case of the portal <http://www.traditions-vivantes.fr> (<http://www.lebendige-traditionen.ch> in German, <http://www.tradizioni-viventi.ch> in Italian), the initiative of Swiss inventory recently launched (September 2010) by the Swiss Federal cultural office in collaboration with the National commission for the UNESCO. After the ratification of the Convention in 2008, the Swiss government decided to organize the preparation of national inventories and nomination files with a strictly democratic and decentralized procedure. Each canton has been charged of preparing its own list of items. Each regional government has been trying to involve the local communities by inviting the population to signal items that they consider ICH. As a result, 389 propositions have been collected (and published on the website, <http://www.bak.admin.ch/traditionsvivantes>). A national Committee will evaluate these proposals and draw the official inventory that will be used to select items that would be submitting to the UNESCO lists (Spring 2012).<sup>21</sup>

As a consequence of such procedure, the website, <http://www.traditions-vivantes.fr>, which may have centralized all the regional inventories, is quite peripheral on the graph (at the bottom right). Its creation mirrored the preservation of the existing scenario of oral cultures and traditional practices, rather than affecting it. More importantly, this inventorying approach sheds light on the distinctive structure of the Swiss network. On one hand, with regard to the distribution per scale, the involvement of cantons in inventory building favors the inclusion of national nodes in the local networks and makes the distinction between groups less clear-cut. On the other hand, with regard to the distribution per type, the inventory process explains the increasing importance of institutions in a preservation system until recently dominated by associations and individuals.<sup>22</sup>

Indeed, locally, the web mapping shows deeply interconnected groups representing vital communities active in preserving their heritage, including music (see the group of individuals around the blog [folkmusik.ch](http://www.folkmusik.ch) at the left and the group of associations around the Swiss association of folk music at the top center), traditional customs (see the cluster at the top), and handcraft (the cluster related to cutting around [scherenschnitt.ch](http://www.scherenschnitt.ch) at the bottom). Sometimes, within these groups, it is also possible to identify smaller clusters for a specific type of musical tradition or instrument (e.g. see the small cluster of nodes related to accordion at the top right or the cluster of nodes related to the jodler at the top left). This structure, however, does not cause dispersion of the network (as in the Italian case) and remains very much clustered as well as very dense owing to the presence of national associations playing a key networking role at both national and local levels.

## Final remarks

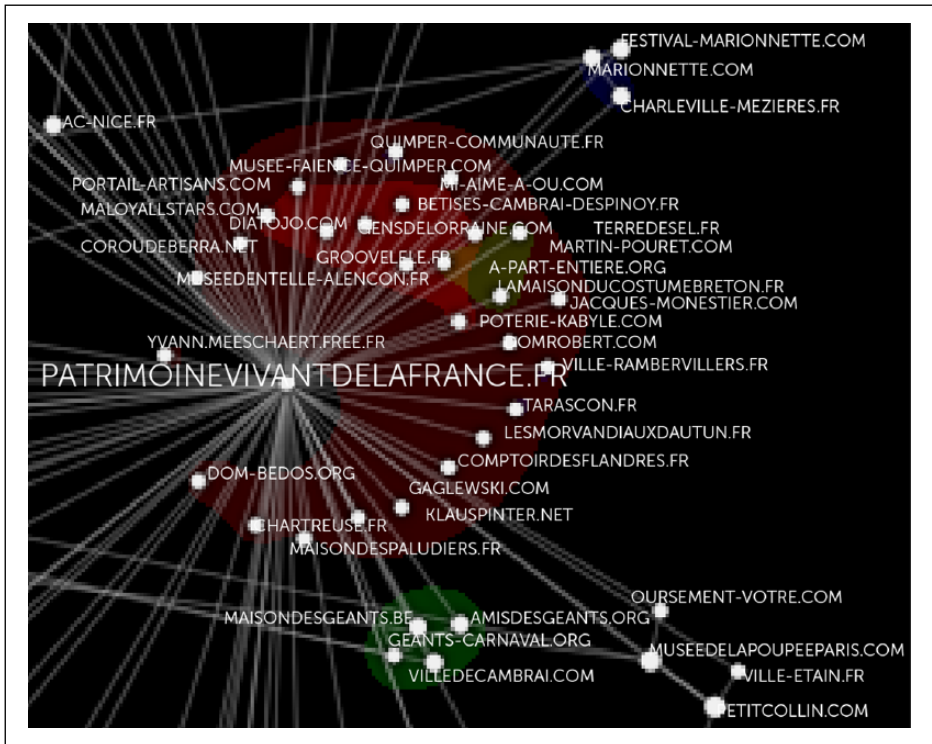
In this study, we have proposed a new methodology (web mapping) and new form of representation (heatmaps) to describe the networks of ICH in three different countries. We chose this approach because it seemed particularly suitable for comparative and multilingual analysis, and we have not been disappointed by its results. Not only the analysis has provided empirical evidence of some well-known features of the analyzed preservation systems, but it has also offered some interesting and unexpected observations.

With regard to the first type of observations, the analysis confirmed that national and institutional nodes (particularly, the overlapping of the two categories, that is, national institutions) play the role of authorities of the networks, receiving most of the links and consequently being highly visible websites in the corpus. The UNESCO Convention clearly entrusts its implementation to the States. Therefore, it is not surprising that the agencies to which the States delegate this task (the Ministry of Culture in all three cases) end up being the central nodes guaranteeing the interconnection of the network. While national institutions occupy the center of the networks, local and individual nodes tend to be at the margins of the graphs, and local websites are often densely clustered around specific cultural practices. Moreover, as it could be expected, the network structure of each country mirrors the main characteristics of its cultural system. For example, we can easily oppose the centralized system of France and the decentralized system of Switzerland.

Besides these predictable observations, our method also provides several original cues both on the specific national networks and the ICH global preservation system. First, web mapping helped us to investigate the hyperlinking strategy of each country in depth. While heatmaps helped us to distinguish zones with unequal density of connections, zooming in the web maps helped us to understand why connections are established (Figure 7). Owing to the color thresholds based on the density of connections, heatmaps allowed us to identify clusters and groups. On comparing the images, we could observe that the Italian network has several local groups autonomous from the center, while France has very few peripheral groups and Switzerland has a very clustered and dense structure that privileges big agglomerates where national and local nodes as well as institutions, associations, and individuals coexist and interact in the same cluster. With regard to the reasons for establishing connections, the navigation of web maps allowed us to distinguish two types of rationale that explain why nodes belong to specific groups. Some groups coalesce around a common thematic interest, while others share the same geographic location. The analysis also allowed us to reveal some interesting cases, such as the Occitan cluster in the French map, where both reasons coexist.

Second, web mapping helped us to compare the weight of international bodies, especially the UNESCO, in the different national systems. Graphs per scale emphasize the different importance and role of the UNESCO website (<http://www.unesco.org>). While in Italy there are two major international clusters and the node [unesco.org](http://www.unesco.org) is central and highly connected, in France and Switzerland, international nodes, notably [unesco.org](http://www.unesco.org), are less important than we expected. In the French graph, <http://www.unesco.org> is a visible node, but it does not play a key role in the global texture. In Switzerland, it is not even particularly visible.





Third, web mapping helped us to investigate the involvement of local communities: an issue that is attracting more and more attention of both policymakers and scholars. Indeed, the graphs allow observing the participation of individuals, foremost heritage bearers, in the safeguard of the ICH. Although websites of individuals and groups were a minority in all graphs, all images highlighted some common trends. Individual nodes are generally not directly related to the authorities of the graph but are related to local associations or other individuals. Groups constituted by individuals are usually dense and share a thematic focus: Often, they represent nonprofessional and noninstitutional safeguard initiatives supported by amateur blogs or web portals managed by informal groups of people. Despite their informal organization, these groups represent dense and active web communities (in particular, see the Italian groups gathered around <http://www.pizzica.it>, <http://www.totarella.it>, and <http://www.merlettoitaliano.it>). Conversely, we have the case of institutional portals (such as the French [patrimoinevivant.fr](http://patrimoinevivant.fr)) that assemble individuals who do not recognize themselves as groups (as shown by the lack of direct hyperlink connections). This disconnection between the clusters of local bearers and the national institutions may have been derived from a bias of our methodology (the relations may just not be visible on the web). Yet, the lack of connections may also be explained by a different interpretation of the ICH label. People who recognize themselves as bearers may not correspond to the interpretation of the State of the Convention

or to the institutional priorities of preservation. If this is the case, then our results confirm the observation of several scholars that national institutions still find it difficult to involve communities in the implementation of the Convention.

Finally, the comparative analysis of the ICH networks allowed us to highlight the importance of different actors in different countries. While in France the actors of the education sector are numerous and important, in Italy and Switzerland, they are less. Conversely, in Switzerland, we noted the importance of copyright institutions and associations, which is almost absent in the other countries.

Admittedly, all these insights need to be confirmed by a more traditional ethnographic approach, but we believe that web maps have proven their value as *exploratory tools*. To encourage readers to explore even further, interactive versions of the web maps discussed in this study are available on the website, <http://www.patrimoineim-materiel.net>.

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## Notes

1. Initiated in 1973, when, for the first time, Bolivia asked for a protocol to protect folklore, the United Nations Educational, Scientific and Cultural Organization (UNESCO) reflection on intangible heritage was developed through numerous international meetings and lively controversies (for a summary of principal meetings, see UNESCO website <http://www.unesco.org/culture/ich/>). The discrepancy between the English “intangible cultural heritage” (ICH) and the French “patrimoine culturel immatériel” (both in the official Glossary) exemplifies the difficulty of reconciling opposing conceptions. The coexistence of the two terms is the result of a delicate compromise (Van Zanten, 2004).
2. On the relation between the two Conventions, see D. Munjeri (2004) and B. Kirshenblatt-Gimblett (2004).
3. The development of digital methods is relatively recent and followed the diffusion of digital media. Three main phases can be distinguished in this development:
  1. During the years of the advent of the Internet, social scientists conceived electronic media as nothing more than new terrains for old methods. Notions, such as “cyber-culture” (Negroponte, 1996), “virtual communities” (Rheingold, 2000), and “online identities” (Turkle, 1995), were therefore introduced to channel the novelty of new media within the tradition of social sciences.
  2. Such enterprise, however, has soon been defeated by the speed at which digital technologies have infiltrated modernity. Electronic interactions have become so pervasive that they can no longer be conceived as a separate social space. This new approach was animated; for example, the “Virtual Society?” (Woolgar, 2002) program highlighted the multitude of ways in which online and offline interactions are interlocked.
  3. Finally, scholars, such as Richard Rogers (2004, 2009), advanced the idea that digital interactions are now so universally weaved in the fabric of collective existence that their study can provide a new way to investigate all types of social phenomena.
4. <http://www.google.org/flutrends> (accessed 27 January 2012).

5. See, especially, the work done by the Digital Methods Initiative led by Richard Rogers at the University of Amsterdam (<http://www.digitalmethods.net/>).
6. See, for example, the work of Adamic and Glance (2005) on the US political blogosphere and the work of Rogers and Ben-David (2008) on the Palestinian blogosphere.
7. See <https://www.issuecrawler.net/> (accessed 27 January 2012).
8. See <http://webatlas.fr/wp/naVICrawler/> (accessed 27 January 2012).
9. In some cases, the distinction between “national” and “local” may be very tricky; for example, the regional bodies in Switzerland, even if they act at regional level, may be considered as national administrations. In this study, we considered only bodies at the country’s level as national.
10. See <http://gephi.org/> (accessed 27 January 2012) and Bastian et al. (2009).
11. More precisely, the heatmaps are constructed by overlapping three density heatmaps of three different colors: blue for national points or institutions, red for international points or individuals, and green for local points or associations. The color of each point of the image is calculated according to the heat radiating from all nodes (each node radiates according to an exponential decay, whose half-life is proportional to its in-degree in the graph) computed thrice for blue, red, and green. It must be noted that although the three heatmaps are computed separately, their luminosity is normalized according to the same maximum density (references representing the largest share of the nodes in the network; the red heatmap reaches lighter levels). For each heatmap, the colors are then aggregated in up to nine thresholds of equidistant luminosity. As the colors employed are pure (0000FF for blue, FF0000 for red, and 00FF00 for green), their luminosity adds up mathematically in the red–green–blue (RGB) image; for example, light violet areas are dense in red and blue nodes, and white area is dense in nodes of the three types.
12. The Canto a tenore (Sardinian Pastoral Songs), the Opera dei Pupi, Sicilian Puppet Theatre, and the Mediterranean Diet.
13. See, for example, the *Comitato per la promozione del patrimonio immateriale* (<http://www.ichnet.net>), a nongovernmental organization (NGO) constituted by associations, groups, and individuals, whose activities inspire the UNESCO principles.
14. Only exception is the collective candidature of “The Mediterranean diet” that was presented with Spain, Greece, and Morocco and was inscribed on the UNESCO list. It is interesting to note that this candidature was supported by the Ministry of Agriculture, rather than by the cultural Italian bodies.
15. Today, in Italy, there is no institutional website clearly dedicated to the ICH Convention and national inventories as observed in other countries.
16. Unfortunately, outgoing links on this site have been traced partially because of some technical issues of the crawler.
17. See <http://www.unesco.org/culture/ich/index.php?lg=en&pg=00311&cp=FR> (accessed 27 January 2012).
18. This interconnected group of nodes clearly visible on the right side of the map does not represent a local cluster. It is rather a technological artifact: a group of links generated by a big national web portal.
19. The Compagnonnage, network for on-the-job transmission of knowledge and identities, has been inscribed on the UNESCO representative list in 2010.
20. This list was created before the official ratification of the State to the 2003 Convention. It was meant to collect the ICH bearers, rather than the items, and was developed through a very participatory method: Everyone can add his or her name to the list. Outgoing links from this website have been drawn only partially because of technical issues (the list is organized as a pdf file, so it could not be scanned by the crawler).
21. Indeed, Switzerland has no item inscribed on the UNESCO lists yet.

22. We carried out a previous web mapping study in July 2010 that revealed a quite different structure (Severo, 2010).

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