

Fondazione Mondo Digitale
a Knowledge-oriented
Non-profit Organization

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Towards a Knowledge-oriented Non-profit Organization - The Case of the Fondazione Mondo Digitale

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1 Introduction

Much has been written on the strategic role of knowledge for the competitive advantage of firms. The field of knowledge management has a long-established tradition and many schools of thought, amongst them, those referring to the resource-based view (RBV) of the firm the knowledge-based view of the firm and the competence-based view of the firm. Other schools of thought include those identifying and taxonomizing different types of knowledge such as tacit and codified knowledge, or embedded, embodied and encoded knowledge. As said, however, the work on organizational knowledge has concentrated mostly on the competitive forprofit organization.

Instead, little has been said regarding the role and value of knowledge in non-profit organizations (NPOs) that emerge and develop in the social sector. In this sector, the motivation is primarily the creation of social value and pure market-based measurements criteria are replaced by social criteria, often, difficult to measure. Knowledge, however, is also essential to the performance of non-profit organizations, but the motivations, forms of development, modalities of use and diffusion are likely to differ from those of for-profit firms, particularly large firms. In fact, they are also likely to differ amongst the many varieties of organizations that populate the non-profit sector (e.g., varieties of charities, social firms, social enterprises, social businesses, etc).

The concern of this paper is with the type of non-profit organization that has knowledge as a central plank for its growth and sustainability strategy. As we shall see, this kind of *knowledge-oriented non-profit organization (KNPO)* is characterised by a continuous and systematic effort to acquire, produce, use and diffuse knowledge for the improvement of its own internal operation, as well as for the quality of the products/services offered to its stakeholders and particularly its social beneficiaries. As Sanchez and Heene (2000) point out in the context of a firm, "...processes for identifying, acquiring, codifying, and transferring new knowledge are central to ...[the]... ability to build new organizational competences." (p.27) In the non-profit context, however, a large proportion of organizations tend to be small in size and resources and this conditions the nature and extent of knowledge processes they are able to implement at any given time; simultaneously, today,

knowledge-oriented strategies are critical to NPOs' expansion of their resources and, hence sustainable growth. Becoming a KNPO, then, is not an easy challenge; it requires from the NPO a continuous commitment and effort to evolve and consolidate a strategic knowledge approach and platform of instruments/activities for its operations in social value creation.

To examine these statements, the paper looks at the case of the Fondazione Mondo Digitale (FMD), an Italian non-profit Foundation born in Rome with the mission to contribute to the dream of a knowledge society for all. Over a few years, the FMD has defined and implemented a knowledge strategy and platform of instruments and activities, as a fundamental part of a strategy aiming for an internationally sustainable presence and social impact. This work has generated an evolving knowledge approach referred to as Action Research, Development and Implementation (ARD&I). This approach makes the FMD, if not a full-blown, mature KNPO, at least a young, early-stage KNPO.

The argument of the paper is structured as follows. First, it reviews a variety of concepts of knowledge and develops a taxonomic instrument focusing on knowledge epistemology and ontology, as well as on the broad relationship between knowledge and organizational types. Second, it describes the characteristics of the Fondazione Mondo Digitale with emphasis on its strategic approach to knowledge. Third, the taxonomic instrument is applied to the FMD, enabling an analysis of (a) the type (epistemology) and location (ontology) of the knowledge evolving in the organization, (b) the FMD's resemblance to existing knowledge-related organizational types, and (c) the characteristics and processes of the FMD's ARD&I strategic knowledge approach and its potential evolution towards an advanced form of KNPO. A final discussion highlights the fundamental difference of motivation, governance, and knowledge production and dissemination existing between a KNPO and knowledge-oriented forprofit organization.

2 Knowledge Epistemology and Ontology and Relations to Organizational Types

The literature dealing with knowledge is huge and multi-faceted. Indeed, the concept of knowledge has been explored from multiple perspectives, including epistemology (e.g., nature, content, methods), ontology (e.g., location in individuals, groups, organizations), economics (e.g., strategic value, appropriability) and organizational theory (e.g., relationship between knowledge and organizational types). Other authors have sought to associate different types of knowledge with different types of learning modes and even domains of learning (Fleck, 1996; Nonaka and

Takeuchi, 1995; Lam, 2000). For the purpose of this paper, however, the dominant angles will be epistemological, ontological and organizational. In addition, it is worth stressing that, so far, most of the perspectives abovementioned have been applied to the theory of the firm, including strategic alliances, rather than to non-profit organizations. For this reason, the review of this section is mostly based on the knowledge approach of forprofit organizations that acquire, use and diffuse knowledge for competitive advantage. Later on, in the analysis of the FMD, the paper shifts its focus to the world of non-profit organizations.

Figure 1 helps to organize the discussion. It identifies various categories of knowledge found in the literature and organizes them in accordance with the three major angles of the paper. It offers a typology that, from left-to-right, starts with epistemological categories, follows with ontological categories, and finishes with knowledge-related organizational categories. The application of the taxonomic instrument in this paper is intended to facilitate a knowledge characterization of non-profit organizations, but it may be equally used for organizations from the forprofit sectors.

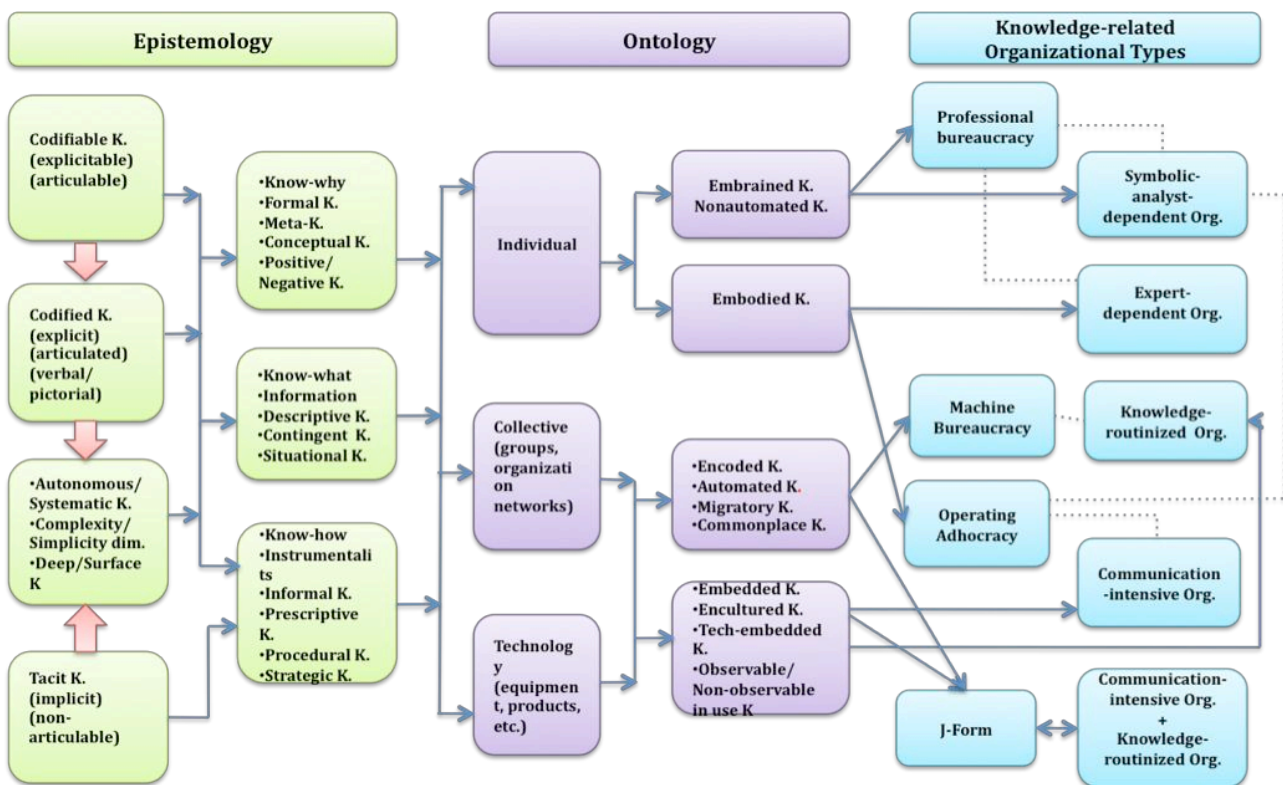


Figure 1. Taxonomy of Knowledge from the Viewpoint of Epistemology, Ontology and Knowledge-related Organizational Types

2.1 Epistemological Knowledge Categories

Perhaps the most common epistemological distinction is between ‘tacit’ ‘and codified’ knowledge (Polanyi, 2002, 1966; Teece, 1981, 1986). *Tacit knowledge* is implicit, non-articulable, wordless, pictureless and, therefore, cannot be codified or made explicit through books, software or other media independent of human beings. In fact, Fleck (1996) sees tacit knowledge as ‘wholly embodied in individuals.’ As such, it can be learnt and taught primarily through direct apprenticeship with the person “possessing and teaching” the knowledge. Differently, *codified knowledge* is articulated and explicit and can be learnt and taught by formal means and courses. De Jong and Ferguson-Hessler’s (1996) categories of *verbal (analytic) knowledge* (i.e., associated to abstract words and propositions) and *pictorial (analogous) knowledge* (i.e., associated to imagery and concrete words) belong to codified knowledge.

It must be noted that for Polanyi (1966) tacit knowledge and explicit knowledge were not sharply divided. Thus, “[w]hile tacit knowledge can be possessed by itself, explicit knowledge must rely on being tacitly understood and applied. Hence all knowledge is *either tacit or rooted in tacit knowledge*. A *wholly explicit knowledge* is unthinkable.” (Polanyi, 1966, p.7) This fundamental unity of tacit and codified knowledge sustains Harari’s (1994) all-encompassing view of knowledge as including peoples’ competencies, skills, talents, thoughts, ideas, intuitions, commitments, motivations and imaginations.

Along with tacit and codified knowledge, however, Figure 1 shows a third category: *codifiable knowledge*, that is, knowledge that can be articulated and become codified, but it is not so and may remain forever implicit in an individual or organization. For Winter (1998), “... failure to articulate what is articulable may be a more severe handicap for the transfer of knowledge than tacitness itself.” (Winter, 1998, p.177) We shall see that this not-articulated codifiable knowledge has major importance for non-profit organizations seeking to become KNPOs.

Finally, the first column of Figure 1 also shows a box containing the pair of categories complexity/simplicity of knowledge. Thus, Teece (2003) defines the pair *autonomous/systematic knowledge* and Winter (1998) the *complexity/simplicity dimension of knowledge*. The two pairs of categories are equivalent since autonomous knowledge has simplicity due to its confinement to stand-alone products; whereas systematic knowledge has complexity because each part of the system depends on others and cannot be substantially modified without affecting these other parts and, consequently the entire system. A different angle related to the complexity-simplicity dimension is De Jong and Ferguson-Hessler’s (1996) categories of *deep knowledge* and *surface*

knowledge; the first is associated with concepts, principles, procedures, comprehension, abstraction, critical judgement and evaluation and it is firmly anchored in a person's knowledge base; the second is associated with reproduction and rote-learning and lack of critical judgement. It is worth noting that the placement of these pair of categories in the first epistemological column is due to them being the result of the combination of the other types of knowledge. Thus, epistemologically, it is not different from the others, it is not unique either, it is the result of the others in terms of simplicity or complexity.

The second column in Figure 1 deepens the four categories of the first column by looking at the more specific content of knowledge in terms of different levels of understanding. At the top is *know-why* that Sanchez (1996) and Sanchez and Heene (2000) define as theoretical understanding of why product designs work. This knowledge enables a firm to adapt a product design or to develop a new product design to affect significant change in the state of a system. Fleck (1995) uses the term *formal knowledge* for this type of knowledge encompassing theories, formulae, etc. usually available in written or diagrammatic form, e.g., textbooks. Whilst De Jong and Ferguson-Hessler (1996) call *conceptual knowledge* this type of accepted, unchangeable concepts and principles (a difference is that these authors includes facts as well). Another of Fleck's categories that can be included here is *meta-knowledge*, defined as general cultural and philosophical assumptions of organization and society.

The last knowledge categories inside the first box of column 2 are Teece's (2003) pair *positive/negative knowledge*; these are more related to the process of knowing since the main characteristic of positive knowledge is that it leads directly to new knowledge, while negative knowledge leads indirectly to new knowledge by showing the paths not to pursue, or, dead-end paths. In this respect, they are not really clear-cut epistemological types since they depend on the fruitfulness of the paths of enquiry taken by people. Nevertheless, they may be conceived as a special case of know-why since negative knowledge provides the content and reason not to continue a given path of research, and positive knowledge does the opposite. Such connection with research and well-defined judgement for the production of future knowledge also makes it more appropriate to link positive/negative knowledge to codified (or codifiable) knowledge.

Know-what (or who and where, for that matter) is next down column 2 along with other concepts that share similarities with its definition. *Know-what* is referred to as *information* by Kogut and Zanders (1997) and includes facts, axiomatic propositions, and symbols. It can be transmitted

without loss of integrity, thus belonging to codified knowledge. For Sanchez (1996) know-what is strategic understanding of competitive purposes to which know-why and know-how might be applied. This knowledge “enables managers to *imagine and define* feasible new kinds of products and new processes for developing, producing, and marketing products.” (Sanchez, 1996, p.136) Know-what is similar to Vincenti’s (1984) *descriptive knowledge*, that is, knowledge that describes things as they are, facts, in an explicit fashion. It is also similar to De Jong and Ferguson-Hessler’s (1996) *situational knowledge*, i.e., knowledge about situations in a particular domain (e.g. problem area, system) that enables the problem-solver to sift relevant features out of the problem statement. Fleck (1995) also identifies a related knowledge type in the concept of *contingent knowledge*, i.e., distributed, apparently trivial information, data.

In turn, *know-how* is a description of knowing *how* to do something and defines current accumulated practical expertise or skills inside the firm (Kogut and Zanders, 1997). It is fundamentally associated with knowledge embodied in practical skills and, hence, tacit knowledge, an association also found in Fleck’s (1995) *instrumentalities* that contain the element of embodied knowledge in the form of use of tools. Vincenti (1984) also defines a procedural, operational knowledge (know-how) that he calls *prescriptive knowledge*. For him, however, this prescriptive knowledge is explicit rather than tacit, showing that there is no single, universally accepted set of definitions of knowledge types. This is also confirmed by Fleck’s (1995) know-how category of *informal knowledge* relating to rules of thumb, tricks of the trade, etc. Since informal knowledge can be made explicit in guidebooks, it is also related to codified rather than to tacit knowledge. De Jong and Ferguson-Hessler (1996) propose two other categories of know-how. The first - *procedural knowledge* - is domain-and-problem-specific and helps the problem-solver shift the problem state into another. The second - *strategic knowledge* - is more general and helps persons organize their problem-solving process most likely through a general plan of action. It is applicable to a wider variety of types of problems within a domain.

2.1.1 *Relations between epistemological categories of knowledge*

Figure 1 also shows by means of arrows the relationships between the different epistemological categories of knowledge. Given the flexible borders of different authors’ definitions, the relationships represented by the arrows should be taken as predominant rather than rigidly exclusive. Also, for the sake of simplicity, only the first category inside a box is used in the discussion.

Starting from the first column, the top thick vertical arrow shows that codifiable, non-articulated knowledge can always evolve into codified, articulated knowledge. The opposite is not possible. The two thick arrows feeding into the box autonomous/systematic knowledge from the boxes codified and tacit knowledge shows that the latter can be part of the paired categories autonomous/systematic knowledge. Moving to the right-hand side of the first epistemological column, the three thin arrows joining codifiable, codified, and autonomous/systematic knowledge with the three arrows leading to know-why, know-what and know-how imply that the latter forms of knowledge may all be (a) codifiable or codified, and (b) found in autonomous/systematic knowledge. In turn, the arrow going from tacit knowledge to know-how imply that the know-how embodied in skills is indeed tacit knowledge.

2.2 *Ontological Knowledge Categories*

Diversity in the location of knowledge gives rise to a taxonomy of ontological categories. The third and fourth columns in Figure 1 illustrate a number of these categories and their relationship. The broadest categorization in the third column differentiates between human and non-human locations of knowledge. The human dimension involves individual and collective location of knowledge (i.e., groups, organizations and networks). The non-human location involves technology. This location and the knowledge contained in it are certainly human-creations but, once the knowledge has become embedded in tools, machines, products, it then resides in technology, something that has clear implications for issues such as knowledge transfer.

The arrows joining these first ontological categories (third column) and the epistemological categories of the second column represent the relationship between the two sets of categories. They show that know-why, know-what and know-how are, or can be, all located in human (i.e., individuals, groups, organizations, networks) and non-human (i.e., technology) entities. Indeed, in the age of the knowledge society, innovation, information and communication technologies and genetic engineering, it is possible to say that organizations, networks, etc., are effectively ensembles of human/non-human constituents operating as single, systemic wholes.

The fourth column in Figure 1 contains a more detailed ontological categorization. Thus, Collins (1993) and Lam (2000) propose the concepts of *embrained*, *embodied*, *encoded*, *embedded* and *encultured knowledge*.

For Collins (1993), *embrained knowledge* relates to brain physicalness (e.g., neuron interconnections, chemistry), while Lam (2000) stresses its individual-explicit character dependent on the individual's conceptual skills and cognitive abilities. Thus embrained knowledge is formal, abstract or theoretical knowledge (e.g., scientific knowledge). De Jong and Ferguson-Hessler's (1996) category of *nonautomated knowledge* can also be included here given its association with conscious, step-by-step process of choice and execution based on fairly general methods.

Embodied knowledge is also individual since it resides in peoples' bodies such as abilities/skills (Collins, 1993), building upon 'bodily' or practical experience. It is tacit and action oriented (Lam, 2000).

In turn, *encoded knowledge* is collective-explicit and conveyed by signs and symbols stored in blueprints, recipes, written rules and procedures. Encoded knowledge is another term for codified knowledge, and Collins (1993) prefers to call it *symbol-type knowledge* residing in books, computer disks, etc. A related term proposed by De Jong and Ferguson-Hessler (1996) is *automated (compiled) knowledge* since it enables a continuous, fluid and automatic process. It is associated to strong situation-specific methods, deep representation of a given task, and well-structured knowledge principles and procedures. This type of clearly articulated knowledge is for Badaracco (1991) *migratory knowledge* since it can move rapidly across company and country boundaries. For the same reason, for Teece (1986), codified knowledge is more exposed to industrial espionage, something that, in economic terms, is associated to what he calls a "weak appropriability regime," that is, a technology that is not easy to protect.¹ At the same time, the more a given item of knowledge or experience has been codified, the more rapidly and economically can be transferred. For Starbuck (1992), knowledge widely shared with other organizations is *common knowledge*.²

Embedded knowledge is also collective knowledge but tacit and resides primarily in specialized relationships among individual and groups. Embedded knowledge is contextual and dispersed and is manifested in organizational routines, shared norms, beliefs and understanding, attitudes, information flows, and ways of making decisions that shape the dealings of people and groups with

¹ This association of encoded or codified knowledge with weak appropriability regime does not take into account the role of legal protection in the form of patents or copyright.

² In contrast to *commonplace knowledge* Starbuck (1992) distinguishes *esoteric knowledge*, that is, expert knowledge unique to the organization; when esoteric knowledge is given or sold to other organizations it ceases to be expert and becomes commonplace.

each other (Lam, 2000, Badaracco, 1991). Unlike migratory knowledge, embedded knowledge moves very slowly, even when its commercial value is high. Indeed, its transfer is hard unless those who possess the know how in question can demonstrate it to others. This implies a higher cost of transfer and a “tighter appropriability regime” since the technology is easier to protect (Teece, 1986). Socially embedded knowledge is also called *encultured knowledge* (Collins, 1993 and Blackler, 1995). It resides in the social group but, also, in society, and it changes as society changes (e.g., language).

Finally, there is the knowledge embedded in technology, that is, the knowledge crystallized in products, equipment, processes, products, etc. This type is associated to what Teece (1986) and Winter have called as *observable/non-observable in use knowledge* that relates to easiness of conceptual imitation and reverse engineering, once new products are introduced in the market. Process technology is often less observable and, hence inherently more protectable than product technology (not considering the patent system). Winter (1998) states that “observability in use ... involves the extent of disclosure of underlying knowledge that is necessitated by use of the knowledge.” (p.177)

The arrows joining the third and fourth column in Figure 1 illustrate the relations between the two sets of ontological categories. They show that individual knowledge is associated to embrained and embodied knowledge only; whereas collective knowledge and technology-located knowledge are both associated to categories inside the last two boxes of column 4. In particular, collective knowledge is associated to encoded, migratory and commonplace knowledge in the third box of column 4 and to embedded and encultured knowledge in the fourth box of the same column. In turn, technology-located knowledge is associated to technology-embedded knowledge and to observable/non-observable in use knowledge; and also to encoded, migratory and commonplace knowledge.

2.3 Taxonomic Relationship Between Knowledge Types and Organizational Types

Various authors have sought to develop taxonomic frameworks establishing relationships between different types of knowledge categories. Lam (2000), for instance, proposes a framework that relates the epistemological categories of tacit and explicit knowledge with the ontological categories of individual and collective knowledge, leading to the four categories of embrained, encoded, embodied and embedded knowledge (see Figure 2).

		Ontological dimension	
		individual	collective
Epistemological dimension	explicit	Embrained knowledge	Encoded knowledge
	tacit	Embodied knowledge	Embedded knowledge

Figure 2. Knowledge Types - Relationships Between Epistemological and Ontological Dimensions
 Source. Lam (2000), p.491.

Most interesting for the purposes of this paper are those frameworks that seek to identify relationships between types of knowledge and types of organizations, since this will give us an indication of how a knowledge-oriented NPO may relate to different types of knowledge.

Blackler (1995) and Lam (2000), for instance, argues that different organizations rely differentially on embrained, embodied, encoded, embedded, and encultured knowledge. For Lam (2000), such differentiation depends on the behaviour of an organization in relation to two dimensions: on the one hand, standardization of knowledge and work (high or low) and, on the other, knowledge agent (individual or organization). The organizational types that Lam (2000) identifies are *professional bureaucracy*, *machine bureaucracy*, *operating adhocracy* and *J-form organization* (see Figure 3). Blackler (1995) develops a similar matrix based on two dimensions: on the one hand, focus on routine v/s unfamiliar problems, on the other hand, dependence on the contribution of key individuals v/s collective effort. The first dimension is similar to Lam’s “standardization of knowledge and work (high or low)” and the second is similar to Lam’s “knowledge agent (individual or organization).” On these basis, Blackler also identifies a two-by-two matrix composed of four organizational types: *expert-dependent organization*, *knowledge routinized organization*, *symbolic analyst organization* and *communication-intensive organization*.

		Knowledge agent (autonomy and control)	
		individual	organization
Standardization of knowledge and work	high	Professional bureaucracy	Machine bureaucracy
	low	Operating adhocracy	J-form organization

Figure 3. Organizational Level: Coordination and Learning
 Source. Lam (2000), p.494.

All these forms of organizations are shown on the right hand side of Figure 1, under “knowledge-related organizational types.” Both sets of organizations, Lam’s and Blackler’s, are shown with their respective dominant knowledge-types dependencies, as well as with each others’ relationships. Regarding dominant knowledge-types dependencies, the following is the picture: Lam’s (2000) *professional bureaucracy* has embrained knowledge as its dominant type of knowledge, while *machine bureaucracy* has encoded knowledge, *operating adhocracy* embodied knowledge, and the *J-form* embedded + encoded knowledge. In turn, Blackler’s (1995) *expert-dependent organization* has heavy dependence on embodied knowledge; *knowledge routinized organization* on embedded knowledge; (3) *symbolic analyst organization* on embrained knowledge; and *communication-intensive organization* on encultured knowledge. In Figure 1, these dependencies are shown by the arrows that go from the fourth column to the last two columns representing the diverse types of knowledge-related organizations.

A more detailed comparison of both Lam’s (2000) and Blackler’s (1995) types of organizations show similarities and differences. Thus, both Lam’s *professional bureaucracy* and Blackler’s *symbolic-analyst-dependent organization* derive their capability mainly from the formal *embrained knowledge* of its highly trained individual experts (this relationship is illustrated by the dotted line joining the boxes of the two categories). In the professional bureaucracy, however, formal knowledge constitutes an important basis of internal work rules, job boundaries and status. The key knowledge agents are the individual professionals (e.g., lawyers) and tacit knowledge and innovation play a limited role, since problem-solving consists in the application of abstract knowledge in a logical and consistent way. The difference in the symbolic-analyst-dependent organization is that its activities focus on novel problems, pursuing entrepreneurial problem-solving (e.g., knowledge-intensive firms such as a software consultancies), rather than “high-standardization of knowledge and work.” Blackler (1995), however, distinguishes another type of organization that he calls *expert-dependent organization*. This organization is probably more closely associated to professional bureaucracy in the sense of Lam (2000), insofar as the performance of specialist experts is crucial and there is heavy emphasis on training and qualifications (e.g., hospital) (see dotted line illustrating this relationship in Figure 1). The difference is that Blackler sees this type of organization as emphasizing the embodied rather than the embrained knowledge or competencies of its key members. In fact, if one considers hospitals a lot of the skills of the experts involve body skills. While the example of lawyers reminds us much more of embrained than embodied knowledge.

At the same time, Blackler's symbolic-analyst dependent organization is probably more closely associated to Lam's operating adhocracy (see dotted line joining the two categories), although the former emphasizes embrained knowledge and the latter embodied knowledge. Nevertheless, like the symbolic-analyst dependent organization, the operating adhocracy is a highly organic organizational form with low standardization of knowledge and work and heavy reliance on the diverse knowledge, know-how and practical problem-solving skills embodied in the individual experts, who have a high degree of autonomy and discretion in their work. This type of organization is fluid, fast-learning and fast-moving and tends to generate a great deal of tacit knowledge through experimentation and interactive problem solving. Both the operating adhocracy and the symbolic-analyst dependent organization are vulnerable to the loss of important competences, given their reliance on the individual knowledge (embrained/embodied) of its members.

Lam's *machine bureaucracy* is associated to Blackler's *knowledge-routinized organization* (see dotted line joining the two categories), but, as the arrows show, while the former derives its capability from encoded knowledge, the latter derives it from knowledge embedded in technologies, rules and procedures. In machine bureaucracy, the key organizing principles are specialization, standardization and control designed to achieve efficiency and stability. The knowledge agents are not the individuals but the formal managerial hierarchy formulating rules, procedures and performance standards. In this context, the *application* and *generation* of knowledge are clearly separate and a great deal of tacit knowledge is lost in the encoding process. Instead, the *knowledge-routinized organization* emphasizes collective endeavour and focus on familiar problems but tends to have low skill requirements, hierarchical division of labour and control and is capital, technology, or labour intensive. In a sense, the difference between the two types of organizations is not wide since Lam puts the emphasis on the fact that the knowledge is encoded and hence collectively available and probably appropriated, while Blackler emphasises effective embedding of knowledge in the organization's people and technology. Both of them stress collective well-established rules, procedures and control, thus leaving little space for tacit knowledge.

Lam's *operating adhocracy* is also associated to Blackler's *communication-intensive organization* (see dotted line joining the two categories), but, as the arrows show, while the former derives its capability mainly from embodied knowledge, the latter's emphasis is on encultured knowledge and collective understanding. In effect, unlike the operating adhocracy's emphasis on individual embodied knowledge, the emphasis of the *communication-intensive organization* is on pervasive expertise, collective endeavour, collaboration, communication, and empowerment through

integration. These are the key to success in tackling novel problems and to avoiding heavy loss of competences in case of individuals leaving the organization.

Lam's *J-form organization* derives its capability mainly from *embedded knowledge*, that is knowledge embedded in its operating routines, team relationships and shared culture. The *J* accounts for *Japanese* since this type of organization has key features of the Japanese types of organization such as Nonaka and Takeuchi's (1995) knowledge-creating company. This type of organization combines the stability and efficiency of a bureaucracy with the flexibility and team dynamics of an adhocracy by fostering a structure in which non-hierarchical teams operate in parallel with a formal hierarchical management. A strong organizational culture and shared values are key to the integration of the two structures. The key agents in the J-form organization are the semi-autonomous cross-functional project teams comprising members who integrate knowledge from different areas of expertise. These teams produce a great deal of tacit knowledge, which is diffused to the entire organization through members' rotation across functional units. The J-form has no direct equivalent in Blackler's categorization. It is rather a mix between his knowledge-routinized organization (e.g., machine bureaucracy) and the communication-intensive organization (e.g., adhocracy).

This completes the analysis of the system of categories in Figure 1. Now we are in a position to look at their relevance for the world of NPOs and, particularly, knowledge-oriented NPO (KNPOs). To do this, the paper proceeds with a presentation of the FMD and its knowledge strategy and work.

3 The Fondazione Mondo Digitale

In 2001 the Municipality of Rome decided to launch a public-private partnership to address the challenges of (1) ICT-based educational innovation in schools and (2) the digital inclusion of those sectors of the population at risk of exclusion from the benefits of the knowledge society. The partnership took the form of the Consorzio Gioventù Digitale (Digital Youth Consortium), with the participation of some of the most important ICT companies in the region: Infostrada (now Wind Telecommunication), Unisys, Elea, Engineering, Unidata, Acea (the largest public utility of the country owned by the Municipality). An initial capital of €650,000 was put in place by the founders for the operations of the Digital Youth Consortium.

After five years of initiatives, in 2006 the Municipality of Rome decided to transform the partnership into a foundation, recognising the value of its work in different sectors of society. This was the birth of the Fondazione Mondo Digitale (Digital World Foundation – www.mondodigitale.org). Two additional prestigious organizations decided to join the newly-born foundation, the Lazio Region and Intel. This brought two new elements to the mission of the organization, (a) to expand its operation to the overall Lazio region, and (b) to export its most prestigious projects at national and international levels. With the transformation into a foundation, the organization secured a yearly contribution of € 750,000 for its basic operations: € 450,000 guaranteed by the Municipality of Rome, € 300,000 by the Lazio Region and € 50,000 by Intel.

3.1 The Mission

The mission of the Fondazione Mondo Digitale (FMD) is to work for an *inclusive knowledge society* (IKS) by blending innovation, education, inclusion and fundamental values. The FMD postulates that the benefits that come out from knowledge, new technologies and innovation in all walks of life, including industry, health, education and culture, should be for the advantage of all people without any kind of discrimination. In particular, this means to work for the digital inclusion and empowerment of those sectors most at risk of being left out (older people, immigrants, refugees, etc.). It means simultaneously to work with the school system to involve teachers and students in work of social responsibility with their communities, as formulated in the current visions

of 21st century education. Figure 4 illustrates the major elements integrated in the mission of the FMD.

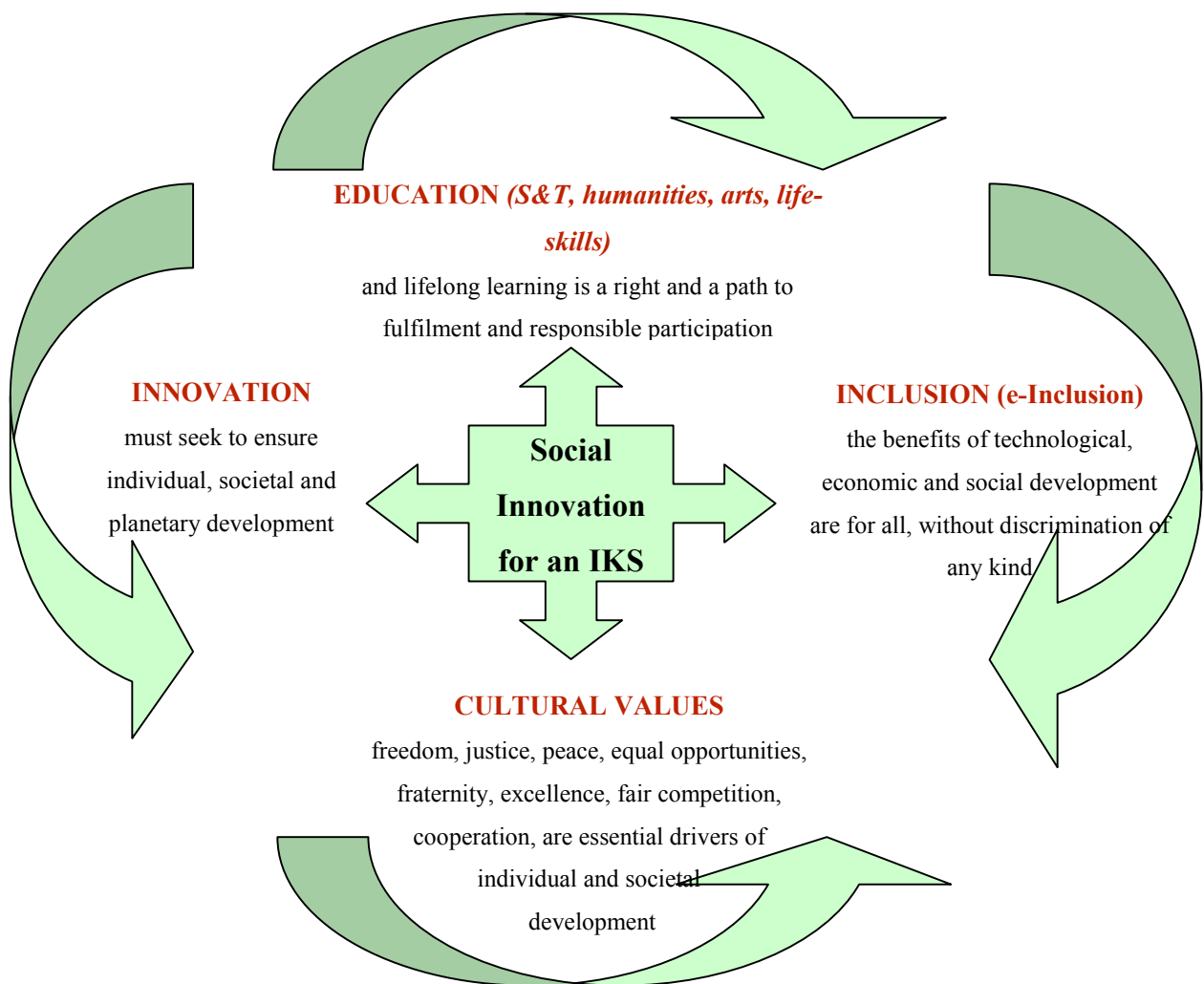


Figure 4. FMD's priorities for an inclusive knowledge society

This mission implies at least two major challenges:

- the creation and implementation of ICT-based educational innovation initiatives, stimulating a virtuous dynamic between innovation, education, inclusion and fundamental values;
- the development of a sustainable, efficient and effective organization that is a motive of pride for its members and stakeholders.
- the development of a knowledge strategy and platform of instruments and activities to capitalize continuously on the evolving assets and experience of the organization.

3.2 *FMD's Governance Approach.*

Critical to the social and economic sustainability of a non-profit organization is its legitimacy in the face of stakeholders. Legitimacy is deeply associated with good-practices of transparency and accountability and, hence, the governance of the organization.³ The FMD has from the start pursued the implementation of good governance practices of transparency and accountability, involving issues of communication, participation, dialogue with internal and external stakeholders, evaluation and continuous learning and improvement. A small organization such the Foundation has to pursue transparency and accountability to consolidate its legitimacy but, above all, to serve better its purpose of creating social value.

An important aspect of accountability, particularly with target beneficiaries of action lines, is the regular use of evaluation conceived as a learning and improvement factor and an open channel for the target beneficiaries' participation in shaping the content of the action lines. Among other aspects, the evaluation seeks to assess the perceptions of target beneficiaries regarding the value delivered by the activities, including areas of difficulties and improvement suggestions. The FMD has also implemented a policy of communicating its activities to the general public through a successful engagement with the media. High-profile public activities of the FMD are regularly reported in the press, online sources, radio and TV (see, for instance, <http://mondodigitale.org/risorse/area-stampa/rassegna-stampa>).

Regarding internal workings and accountability, the FMD has a flat operational structure with a lot of informal communication and clear responsibilities allocated to individuals. Formally, everybody responds to the General Director who also supervises the performance and growth of each of the member of the team along with the Scientific Director who is also Professor at the Edinburgh University Business School. Several members of the Foundation's personnel initially arrived to do a *stage* from Italian universities or with temporary contracts and today have permanent jobs and coordination responsibilities, as in the case of the Project Director. In addition, over the years, the Foundation has been able to attract experienced professional personnel, as in the cases of the Public Relations Director and the Technical Director.

³ A growing literature has discussed multiple aspects of the strategic importance of accountability, including historical reasons, NGOs responses, traditional and new approaches to accountability, various instruments available, and the benefits and difficulties brought about by the new trends. See Ebrahim (2003) and Frumkin (2006).

3.3 *The FMD's knowledge strategy*

The FMD pursues *sound knowledge for sound action and practices in a dynamics of continuous learning*. For this purpose, the Foundation has gradually developed a capacity to work at different levels, from the elaboration of academic theories to the capacity to conduct research, to the development of instruments and the implementation of concrete projects on the ground in each one of its strategic sectors (education, immigration, refugees, etc.)

This innovative approach is called *Action Research Development and Implementation (ARD&I)* because it combines (1) action research (AR) integrating theoretical and practical work, (2) development (D) of a platform of instruments and activities for social innovation, and (3) implementation (I) of grass-root projects mobilizing multi-sectoral players (i.e., government, companies, NGOs and community organizations) in initiatives aiming to touch the lives of people. AR&DI has grown gradually in a cause-and-effect relation with the gradual growth of the Foundation. Certainly, the expert knowledge embrained and embodied in the FMD's people has been a sound base upon which to build. The other fundamental base has been the permanent motivation to improve the value given to people in the interacting worlds of education and e-inclusion. Table 1 summarises the main aspects on the FMD's ARD&I knowledge approach.

In addition, the Foundation aims to enhance the opportunities for further development and growth of its personnel, supplementing the informality of its learning environment with more structured activities aimed at the socialization of more senior personnel's knowledge and skills. This dynamics has a cause-and-effect relationship in the distribution of knowledge inside the organization. Since the FMD is small and covers a wide span of internal and external activities, the knowledge is distributed among individuals who may belong to more than one operational or project group, thus facilitating the socialization of experience and operational knowledge from different projects. We shall see that the FMD is also making an effort to codify knowledge of processes developed in different lines of action, as a way of implementing the knowledge strategy and platform of the organization. This is largely the outcome of one of the peculiarities of the FMD, namely, its *de facto* alliance with the University of Edinburgh through the role of the Scientific Director. This unusual connection for an Italian NPO has given the FMD a dimension of theoretical and strategic knowledge that has allowed the organization to develop a strong vision on how to become a KNPO.

Table 1. FMD's (ARD&I) Knowledge Approach for Social Innovation

	Innovation	Education	eInclusion	Fundamental Values
<p>Implementation (projects at local, national, European government support, and company, community & NGO support)</p>	<p>Diffusion of ICT-based Best-practices in School – Thematic Weeks on a variety of themes: environment, food, robotics, iLife, Java, etc. Global Junior Challenge RomeCup, Open Mediterranean Cup for Educational Robotics. etc.</p>	<p>ICT for the Inclusion of Older People, Immigrants, Refugees, Bed-ridden Sick Kids, Gender Equality, International projects (Cameroon/Saharawi, SILVER) International Social Innovation Conference etc.</p>		
<p>Development <i>Instruments & Platforms</i></p>	<p>Knowledge Codification, Multimedia Knowledge Objects (e.g., videos, case studies, handbooks, books, papers, etc.) Knowledge-based, Community-building Phytural Innovation Platform for Open Phytural Innovation Movements. Innovation Strategy Tool Databases (e.g., people, organizations, funders, etc.)</p>			
<p><i>Operational Skills & Knowledge</i></p>	<p>Management Communications (public relations) Arts, graphics, multimedia</p>			
<p>Action Research <i>Theories for Social Innovation</i></p>	<p>Social Innovation (Wheel of Multi-sectoral Hybridity & Dynamic Hybridity) Technological Development (Sociotechnical Constituencies/Alignment) 21st Century Education Framework - Collaborative Personalization in Education Real-time Evaluation</p>			
<p><i>Practical Philosophy (Beginnings)</i></p>	<p>Pragmatic Idealism (Pragdealism) Holistic Humanism Phytural Innovation Movements</p>			

3.3.1 FMD's ARD&I knowledge strategy and platform

The title of Table 1 indicates that the general theoretical and practical field within which all the activities of the FMD are inscribed is the emerging field of social innovation. Social innovation is the 'overall umbrella' gluing all the strategic dimensions and objectives. The following rows show the main ingredients of the ARD&I knowledge approach and their specific elements. The first top row indicates that the FMD's pursues the integration of innovation, education, e-inclusion and fundamental values in all its activities. The following rows show the content of action research (AR), development (D) and implementation (I).

Action Research

The FMD conducts research at various levels: from theories, to case studies and real-time evaluation of activities and programmes. It is also beginning research into practical philosophy. Currently the research work is on theories of social innovation and entrepreneurship, technological development, 21st century education (collaborative personalization in education), and real-time evaluation. The FMD also conducts research aimed as input into Development (D). This includes research aimed at (a) capturing the knowledge created by its processes for codification into models and handbooks, and (b) evaluating the results of its activities as an intrinsic aspect of its own learning process. This type of more applied research is strategically important to communicate the value of the FMD's activities in terms of accountability and legitimacy. The Foundation also conducts case-study research on good practices of other organizations, particularly schools making innovative use of ICTs for educational purposes. Finally, it has produced contextual assessments of the state of the inclusive knowledge society in Italy and the Lazio region.

Development

The second strategic knowledge dimension is knowledge codification into instrumentalities, particularly the development of multimedia knowledge objects, courses, and software instruments such as evaluation tools and virtual platform for social innovation. Among the multimedia knowledge objects, the FMD produces a great deal of textual, audio and visual material, for both online and offline dissemination. This material routinely makes its way to the FMD's website www.mondodigitale.org, as it does the considerable material generated by newspapers, radio and TV on the work of the Foundation. Knowledge codification into handbooks has focused so far on

the areas of ICT for Active Ageing, ICT for Immigrant/Refugees and Robotics for Didactics; while high-level courses have focused on Social Innovation.

Tools and platforms are key for stimulating a collaborative approach to (1) generation of data, information and specific knowledge of projects and (2) transfer and diffusion of knowledge to wider audiences. In this respect, the FMD is encoding into a Innovation Strategy Tool (software) existing theoretical knowledge developed at Edinburgh University on the nature of innovation processes. This instrument, once available, will facilitate the creation of customized evaluation questionnaires for automatic real-time assessment of strengths and weaknesses of unfolding processes social innovation. It will also facilitate the transfer and dissemination of knowledge of these processes of innovation. This is key for the FMD, given its aim to reach as many people as possible through its social innovation activities.

Projects Implementation (Projects)

The third FMD's knowledge dimension concerns grassroots activities for the promotion of (a) ICT-based innovation in schools and (b) digital inclusion among disadvantaged sectors of the population (e.g., older people, refugees, immigrants, etc.). All the Foundation's concrete initiatives in the various areas concerning digital inclusion aim at touching the lives of people. Areas of activity tend to be continuous with a succession of projects that, at any given time, are at different stages of development: design, pilot actions, implementation or completed. At this level, there is a lot of tacit knowledge in operation, as well as codifiable knowledge. Areas of activity are:

- ICT for Accessibility
- ICT for Students with Special Needs
- ICT for Active Ageing
- ICT for Equal Gender Opportunities
- ICT for the Integration of Immigrants/Refugees
- ICTs for 21st Century Education
- ICT for Global Education & e-Inclusion

This brief presentation of the FMD is now followed by the application of the theoretical framework developed in section 2 to the analysis of the relationship between knowledge and organization in the FMD.

4. The Relationship Between Knowledge and Organization in the FMD

This section analyses the FMD's knowledge approach and organizational form. Thus, it looks back to combine the theory of knowledge (Section 2) with the description of the FMD's, particularly, its ARD&I knowledge approach.

The best way to organize the discussion is to blend the categories contained in Figure 1 with the categories and information in Table 1. This gives rise to Figure 5 showing the specific relationship between knowledge and organizational types for the case of the Fondazione Mondo Digitale. It must be noted that this description is valid for the organization today, since in other phases of its development (e.g., at the beginning about a decade ago) the Figure and resulting discussion would have been very different. Let us start the analysis with the epistemological dimension on the left-hand side of Figure 5.

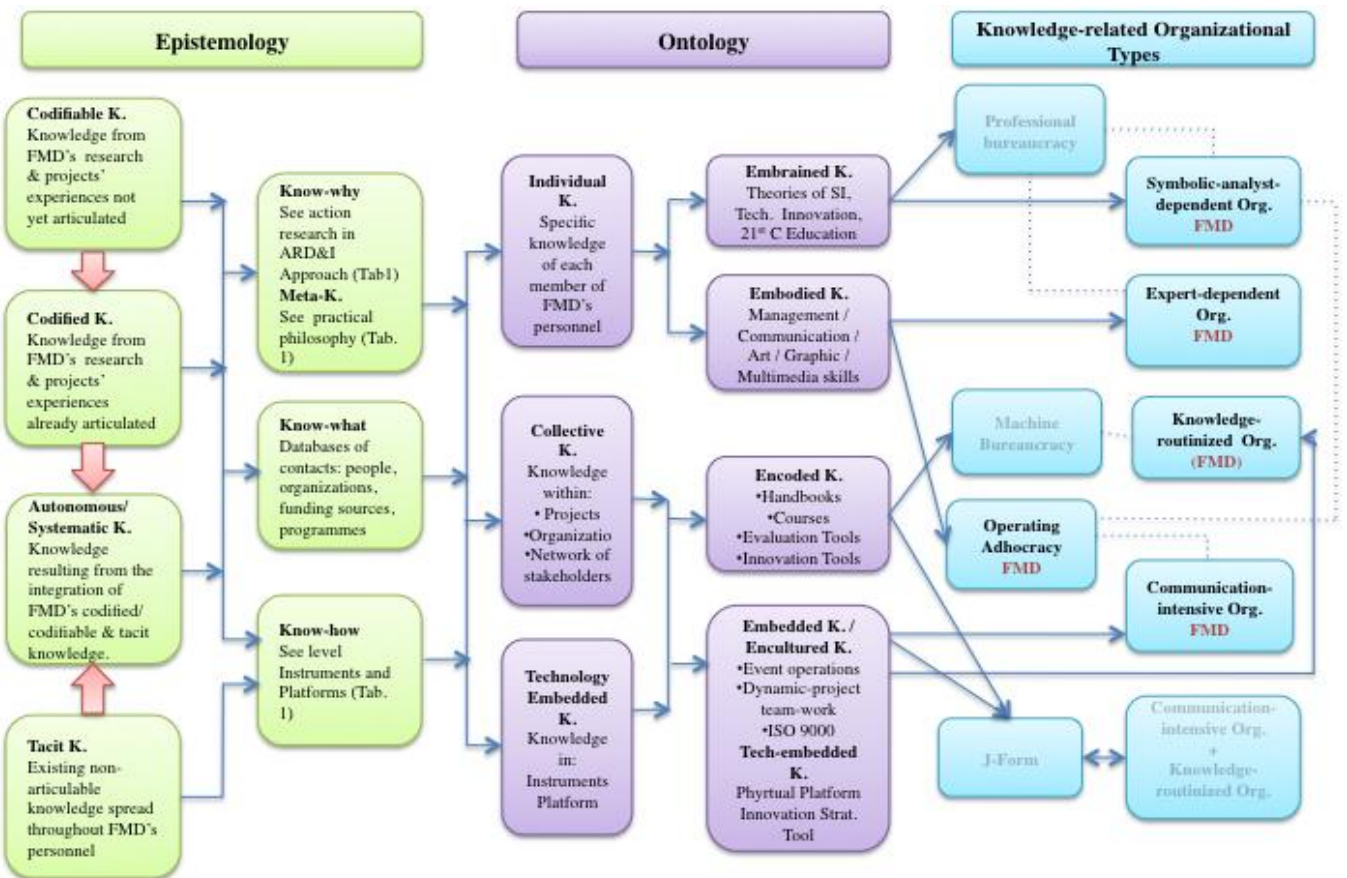


Figure 5. Application of Taxonomy of Knowledge to Case of FMD

4.1 *Epistemological Dimension*

A look at the first epistemological column in Figure 5 reveals that the FMD's activities involve codifiable, codified, tacit and autonomous/systematic knowledge. Codifiable knowledge is the articulable (but not yet articulated) knowledge generated by the FMD through its own research and activities, including research on the experience of other organizations. Codified or encoded knowledge is the articulated knowledge used by the FMD and generated externally and/or internally to the FMD. To this category belong, for instance, (1) books, papers and manuals produced by the FMD through its own research and publication activities, and (2) externally-produced books, papers and documents the FMD uses for its own research and activities. Tacit knowledge is the non-articulable knowledge that exists individually and collectively in the FMD, for instance, inside the small graphics team. In turn, the FMD's autonomous/systematic knowledge is the result of the integration of FMD's codifiable/codified and tacit knowledge.

The second epistemological column shows that the FMD's codifiable/codified and autonomous/systematic knowledge relates to all types of knowledge content: know-why, know-what and know-how; whereas the FMD's tacit knowledge relates only know-how. Let us consider now the FMD's ARD&I approach shown in Table 1.

Starting with codified/codifiable knowledge, the level of Action Research (bottom row in Table 1) shows that these types of knowledge are present in *know-why* through the internal-development of both *theories for social innovation* and the beginnings of *practical philosophy* (meta-knowledge). They are also present in the central row, Development – Instruments & Platforms, as *know-what* (e.g., databases) and *know-how* (e.g., innovation strategy tool) through the FMD's own codification work leading to *instruments and platforms*. In addition, still inside Development, they are also present in the externally-codified knowledge acquired by FMD's personnel through formal training and courses, for instance, on management, evaluation, graphics, etc. Thus, some of the FMD's management, graphics and software personnel have followed or are following university courses while working for the Foundation. Moving up to the top row, Implementation, codifiable/codified knowledge is found as know-why, know-how and know-what in the integrated use of (a) FMD's own theories, instruments and platforms, and (b) formally-learned operational knowledge. In particular, the Implementation level produces a great deal of codifiable knowledge that, given resource limitations, may not reach the category of codified knowledge, thus remaining largely unarticulated. At this level, there is also a great deal of use and generation of tacit knowledge.

Figure 5 shows that tacit knowledge is primarily related to know-how. Thus, in Table 1, tacit knowledge is found at the level of Development – Operational Skills & Knowledge (central row) in the form of, for instance, management, arts, graphics, skills. As indicated, it is also found at the level of Implementation (top row).

Finally, Figure 5 shows that codified/codifiable and tacit knowledge in all their forms (i.e., know-why, know-how and know-what) can all be present in autonomous/systematic knowledge, and hence, at all levels of the FMD's ARD&I knowledge approach. Indeed, taking codified/codifiable knowledge in Implementation, for instance, one can contrast simpler activities such as the publication of a newsletter from a complex programme such the international contest the Global Junior Challenge that involves the multiple coordinated activities. The same situation can be seen inside Development as one compares, for instance, the production of an informative short video with the development of Phyrtual.org – a knowledge-based, community-building online environment. Likewise, Action Research can produce original stand-alone concepts such as *hybridity-builders* in relation to social entrepreneurs, or, an entire original theoretical system as the *wheel of multi-sectoral hybridity and dynamic hybridity*.

4.3 Ontological Dimension

The two central columns of Figure 5 show the categories contained in the ontological dimension of FMD's knowledge, along with the relations these categories have with those in the epistemological dimension (see arrows connecting the two dimensions). The third column and set of arrows on its left-hand side show that all types of FMD's knowledge are present in the 3 ontological categories of individual knowledge, collective knowledge and technology-embedded knowledge. Thus, each member of the FMD's personnel has his/her own specific individual knowledge, while collective knowledge is found in FMD's projects, organization and networks. At the bottom of the third column is the FMD's technology-embedded knowledge found in the software tools and platforms developed and used by the organization.

The fourth column of Figure 5 provides further distinctions inside the ontological dimension of the FMD's knowledge. Thus, looking again at Table 1, one sees that the levels of Action Research and Development contain both embrained knowledge and embodied knowledge respectively. Embrained knowledge is present in the individual capacity of FMD's personnel to develop

theoretical knowledge regarding, for instance, processes of innovation. Embodied knowledge is present in the FMD's personnel operational skills regarding, for instance, management, communication, and multimedia skills. In both knowledge categories, the FMD has particular strengths since its management and communications, for instance, are in the hands of highly motivated and competent people. In turn, the organization's theoretical capacity is the result of the particular partnership between the FMD and Edinburgh University that, through people's transfer, enables the diffusion, implementation and further development of conceptual cognitive skills and academic theories for the benefit of the Foundation's mission and activities. The FMD benefits in at least three ways: (a) it gains a dimension of deeper theoretical understanding that shows it as both 'doing' and 'thinking' organization; (b) it is able to offer a distinctive layer of knowledge assets that represents a source of potential projects and funding; and (c) it facilitates dialogue with a greater range of organizations such as universities and research centres. At the same time, the university benefits from the academic results of the ARD&I programme, for instance, in terms of potential publications in academic journals and immediate publication in the FMD's own website and publications. It is not very common for a small NPO to have a theoretical capacity feeding into its programmes. An alliance with universities offers NPOs an interesting and fruitful way to evolve into KNPO, but the precise mechanisms must be carefully devised.

The remaining categories in the fourth column of Figure 5 concern (a) FMD's encoded (codified) knowledge, (b) embedded/encultured knowledge, and (c) technology-embedded knowledge. The first two types (a and b) are both found in human collectives (e.g., groups, organizations and networks); whereas the third type (c) is found in "non-human" devices and systems. The box "encoded knowledge" shows that the Foundation has an important strand of work in the codification of its own processes and the transformation of the results into, for instance, handbooks, courses and tools (see Development in Table 1). The encoding of individually embrained knowledge, for instance, facilitates a collective diffusion and appropriation of highly conceptual knowledge. This is the purpose of the course on Social Innovation and the Innovation Strategy Tool, both encoding theoretical knowledge to allow a practically useful level of appropriation and use by both the personnel at the FMD and people from the projects and organizations forming part of the stakeholder network of the Foundation. Likewise, the FMD makes an effort of codifying the codifiable knowledge collectively generated in experiences, particularly related to longer-term areas of action and multiple projects. Thus, once an action area has been opened (e.g., older people, refugees), the FMD pursues systematic research aimed at gathering the unarticulated knowledge produced by the experience of all the different persons working in the action line (e.g.,

opportunities and difficulties in the overall process, problem-solving lessons, improvements, etc.). The end result articulates and makes explicit a systematic and evolving model of good-practice that, also, becomes an important ingredient of a platform for new projects and so on. The handbooks are collective products that show the evolution of the FMD's collective codifiable knowledge into encoded knowledge.

In turn, the bottom-box in column four addresses two types of embedded knowledge: first, embedded/encultured knowledge and, second, technology-embedded knowledge. The FMD's embedded/encultured knowledge is collective and is found, for instance, in the organization's preparation and implementation of projects and large events such as the international contest, Global Junior Challenge (see the Implementation level of Table 1). In the case of projects, the FMD's has developed what can be referred to as a practice of *dynamic project-teamwork* whereby people can rapidly group and regroup in accordance with the demands facing the organization in its various areas of action (see Implementation level in Table 1). There is a predominantly tacit norm that everybody should be available and willing to support each other in moments of need. The overall group has developed a close bond reinforced by a climate of high-level of worthwhile activity and achievement. Anecdotally, most of the people at the FMD's office voluntarily crowd together in a small kitchen for daily lunch. The FMD personnel have also developed shared beliefs in accordance with the mission and value of the organization. This is particularly the case regarding ways to see and tackle problems and ethical and empowering ways of working. In terms of ways of working for instance, the FMD seeks to establish a routine practice of evaluation in its projects, so as to improve continuously the value given to target beneficiaries. In this respect, another encultured/embedded knowledge present in the Foundation concerns the quality standard ISO9000. The FMD is certified for this standard and this enables its participation in call for proposals from funding sources requiring ISO9000 certification. One clear FMD's benefit from this process of enculturing knowledge concerns the allegiance and retention of personnel. Social bonds, innovative ways of working and a definite sense of making a difference are crucial ingredients for the satisfaction and retention of people pursuing social value creation. True, no organization is free of tensions and these tend to build in the FMD particularly in times of accumulation of deadlines in the extensive work of the Foundation's small team. The basic trust among people, however, allows for a rapid dissipation of tensions even during difficult periods.

Finally, the FMD's technology-embedded knowledge is found in software products or systems to support social innovation. In Table 1, the level of Development – Instruments and Platforms

mentions the knowledge-based, community-building Phyrtual innovation platform seeking to integrate the physical and virtual aspects of social innovation processes. The online part of this platform is a complex website environment called Phyrtual.org. Another systemic software product is the Innovation Strategy Tool seeking to offer the automatic processing of evaluations of strengths and weaknesses of processes of innovation. This tool seeks to embed knowledge developed in Theories for Social Innovation at the level of Action Research, specifically the theory of sociotechnical constituencies/alignment.

4.4 Knowledge-related Organizational Types

Given the knowledge characteristics just described and illustrated in Table 1 and Figure 5, what kind of knowledge-related organization is the FMD? Columns 5 and 6 in Figure 5 show that the FMD cannot be squarely classified into only one type of the knowledge-related organizations proposed by Blackler (1995) (column 5) and Lam (2000) (column 6). As the FMD's ARD&I knowledge approach shows in Table 1, various forms of knowledge are clearly strategic to the growth and development of the Foundation.

Thus, embrained theoretical knowledge is a distinctive FMD strength but, so far, it is primarily confined to the scientific direction and top management, with limited informal diffusion to the rest of the personnel. The recent development of an evolving social innovation course, however, will allow for a more formal socialization of this type of knowledge inside and outside the FMD. Figure 5 shows two types of organizations related to embrained knowledge: *professional bureaucracy* (e.g., law firm) and *symbolic-analyst organization* (e.g., software consultancy). The FMD fits closer aspects of the symbolic-analyst organization, but it is not one of them completely.

Embodied knowledge is also a strategic strength of the FMD. Figure 5 shows two organizational forms related to this type of knowledge: the *expert-dependent organization* stressing individual knowledge and the *operating adhocracy* stressing collective knowledge. The FMD has important elements of both these types of organizations since management, public relations, and multimedia production have developed into skilled assets for the Foundation. For instance, the Foundation's projects and events routinely attract Italian media presence, including newspapers, TV, radio, etc., that gives the work of the organization a degree of exposure unusual for an NGO. A difference with Blackler's expert organization such as a hospital is that, in the FMD, specialist individual knowledge is not completely dominant and does not require the same degree of training and

qualifications. In effect, in the FMD, the practice of embodied knowledge tends to happen with a great deal of autonomy and in small teams where there is a great deal of communication and apprenticeship. In this respect, the FMD exhibits aspects of Lam's *operating adhocracy*, and even more of Blackler's *communication-intensive organization* with its emphasis on collective encultured/embedded knowledge, endeavour, collaboration, communication, and empowerment. One difference is that in the FMD the effort to encode knowledge into manuals, courses and tools is considered strategic to ensure (a) the scaling up of projects through the facilitation of knowledge dissemination internally and externally, and (b) the retention of codifiable knowledge in case of staff leaving the Foundation. This codification effort gives the FMD an element of *knowledge-routinized organization* without the heavy hierarchy, bureaucracy and technology-intensiveness. One could suggest that, in a very simple and small scale, the evolution of the FMD's ARD&I knowledge approach points towards a combination of elements having a certain resemblance to those found in Lam's *J-Form organization*. Of course, in the FMD, the ARD&I knowledge approach is still at a young stage. In addition, as we shall see below, the evolution of the FMD will actually never be the J-Form of organization, it will rather reach the full-blown *KNPO form*. The reason is that by purpose, governance and knowledge dynamics, the J-Form and the KNPO-form belong to different realms: the former to the forprofit competitive sector, the latter to the social sector.

Figure 6 illustrates the type of knowledge-related organization the FMD represents today and where it is likely to arrive in the future. It shows that important aspects of individual embrained and embodied knowledge are evolving towards collective encoded and embedded knowledge respectively. There is also an evolution of important aspects of embedded/encultured knowledge towards encoded knowledge. The lighter dotted arrows illustrate this knowledge evolution. Simultaneously and for the same reason, the FMD's organizational form is evolving, on the one hand, from symbolic-analyst towards routinized-knowledge organization and, on the other, from expert-dependent/operating adhocracy towards communication-intensive organization (see thicker dashed arrows). For the future, the FMD's overall knowledge-orientation points towards a convergence of these two types of organizational dynamics towards a *full-blown KNPO*, resembling a small-scale adapted form of J-type organization that benefits from knowledge-routinization but skips machine bureaucratization. For this to be achieved, however, a very conscious effort to deepen and consolidate the processes of knowledge encoding and enculturing is necessary while maintaining the agility of the communications intensive organization. The FMD is a small organization and it is likely to remain so in the future. On the other hand, the FMD's approach to

social innovation has the potential to stimulate the emergence of international movements around important social innovation challenges. If this were to materialize, surely new interesting knowledge challenges will come to face the organization.

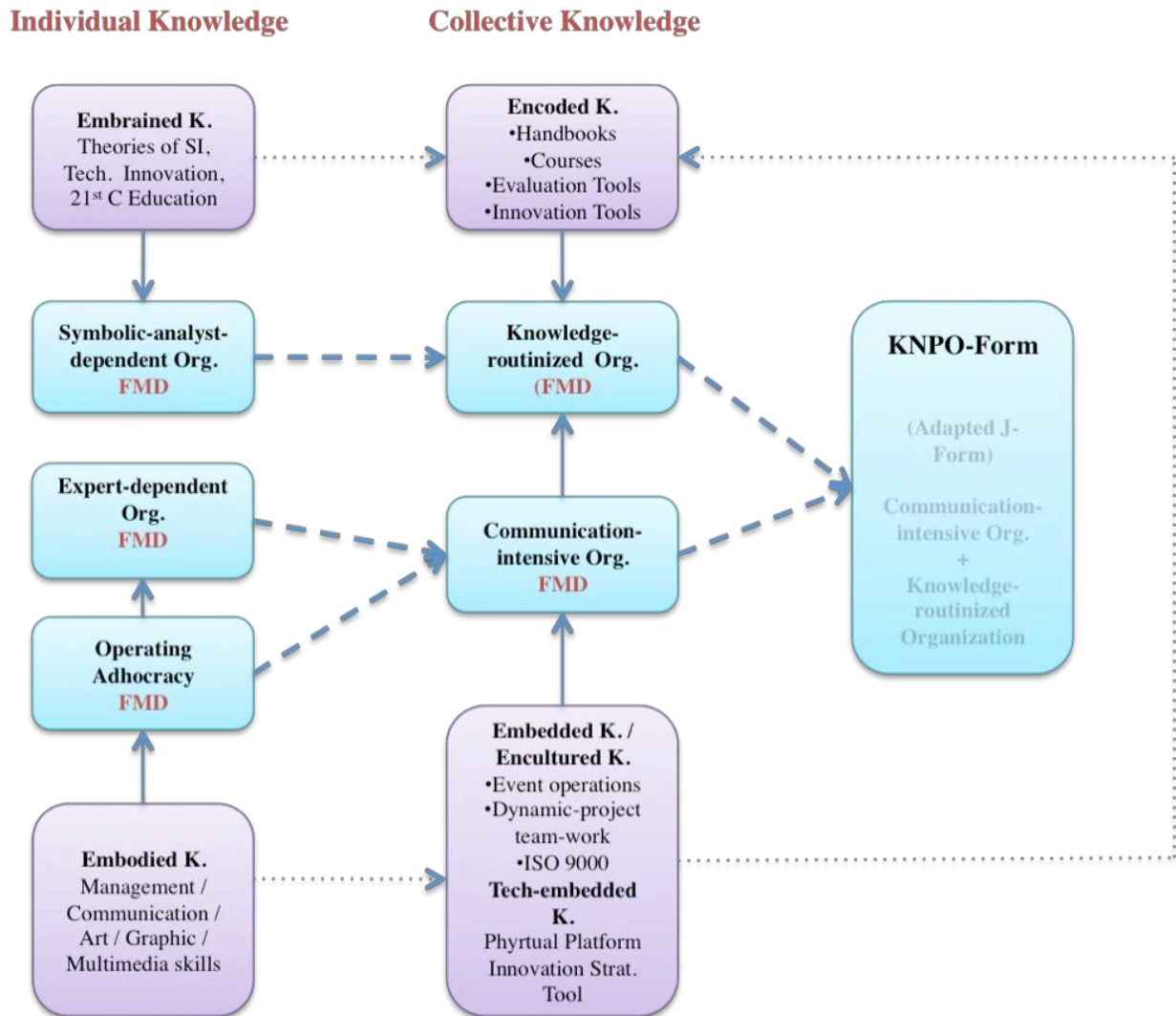


Figure 6. Evolution of the FMD's Knowledge and Organizational Type

5. Discussion

The argument in previous sections has developed a framework to deal with knowledge categories and knowledge-related organizational types. This framework allows for a representation of the evolution of knowledge and related organizational types inside organizations. The framework has been derived from categories developed mostly with reference to forprofit firms devising and implementing knowledge strategies for market competitive advantage.

In contrast, the focus of this paper is primarily on knowledge-oriented non-profit organizations

(KNPOs) and, particularly, in the case of the Fondazione Mondo Digitale (FMD), an Italian NOP following an action research, development and implementation (ARD&I) strategic approach to knowledge. This focus produces a major difference regarding what counts for strategic knowledge for a KNPO as compared with a forprofit competitive firm. In particular, the knowledge dynamics of forprofit firms is geared to the protection of core competencies key resources or strategic capabilities that give these firms a distinctive, unique competitive advantage to protect. This is not to say that firms do not share any knowledge, because they do. But, as Sanchez (1996) notes, they choose the knowledge they share in accordance with their competitive market strategies. For instance, they may decide to share know-how to enable sub-contractors to produce products they need, but they may protect heavily their know-why and know-what. In other cases, they may seek to acquire know-why from external sources while protecting the know-how and know-what, and so on (Sanchez, 1996).

In contrast, in KNPOs, the knowledge dynamics is driven primarily by the motivation to create social value while achieving social and economic sustainability based on innovativeness, flexibility, transparency, accountability and, ultimately, legitimacy. Here the concept of strategic knowledge is not about protected distinctive knowledge, it is about those forms of knowledge that provide the KNPO with the dynamic base to perform effectively in the social innovations it pursues along with others. Commonly, this translates into knowledge openness rather than secrecy, knowledge sharing rather than protection. It also means the possibility of expanding knowledge production from within the confines of the KNPO to other organizations within the KNPO's stakeholder network. Of course, there will also be knowledge a KNPO buys from external sources, for instance, legal and accountancy services in the case of the FMD.

True, part of the KNPO's dynamic knowledge base will be unavoidably distinctive and "naturally" protected, as it were. This involves, for instance, embodied knowledge and non-articulated embrained and embedded knowledge. The key point, however, is that in KNPOs an important amount of initially-distinctive knowledge is codified with the specific purpose of "unprotect" it and share it with the network of stakeholders.

Looking at the FMD's ARD&I knowledge approach (Table 1), one sees that the organization is making public all forms of codified or encoded knowledge: (a) *know-why* at the level Action Research through publications and courses; (b) *know-how* at the level of Development through instruments and platforms such as handbooks, innovation strategy tool, and knowledge-based

community-building social innovation environment, Phyrtual.org. In turn, the open availability of these instruments helps the FMD by (i) transforming ‘less-widely-communicable’ knowledge into a form more accessible and practically useful for appropriation and use by both the FMD’s personnel and people from its stakeholder network; and (ii) contributing to make a reality of the FMD’s ideal of an inclusive knowledge society in the sense of access to knowledge for all. Finally, FMD’s *know-what* is made public primarily at the level of Implementation where the organization shares this type of knowledge with partners in projects and initiatives, including local, regional, national and European government, private companies, NGOs and community organizations. In fact, in these projects and initiatives the FMD blends and shares *know-why*, *know-how* and *know-what* in a process that helps the organization to: (a) expand its range of stakeholders and activities; (b) expand the range of projects and funding opportunities; (c) touch people’s lives for the better in an ever widening quantity; and (d) test and validate theories and instruments.

In conclusion, the Fondazione Mondo Digitale has a vision and a strategy to become a full-blown KNPO and is pursuing its realization with motivation and determination, of course, within the resource limitations of a small but growing organization. In fact, the growth of the FMD depends strongly on its ability to be a KNPO. The development of the ARD&I programme of activities is a major step in this direction, since it has led to a systematization of the FMD’s strategy for knowledge generation, transfer and dissemination, and it has also fostered the Foundation’s reputation as a creative and innovative, knowledge-based organization. There is still considerable work to do to advance the ARD&I approach in all its dimensions. A visit to the FMD’s websites, however, (www.mondodigitale.com, www.gje.it, and Phyrtual.org), provides evidence of the progress made on the road to become a full-blown KNPO. This paper should be seen in this perspective.

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