

Co-Participation of Students in Knowledge Building

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Abstract: In this article I try to explain the role of 21st century students in co-participating in knowledge building. I refer to the forms of collaborative exchange of formal or informal information based on social networking. The pervasive diffusion of new multimedia technologies among young people can no longer be ignored by the education system, nor can it be considered a disruptive element of traditional teaching but an opportunity to transform and integrate teaching and learning processes.

The so-called digital natives have grown up immersed in new technologies that they use almost as an extension of their self to socialize and to express their being. At the same time, thanks to the massive availability of tools and environments, Web 2.0 is a valuable resource that schools can use to design targeted educational proposals, in line with the technological evolution of the 21st century. In this regard, the European Commission proposes the enhancement of digital skills not only for a better integration of young people into the world of work but also to allow them to acquire the right to digital citizenship, which is essential for effective democratic participation in contemporary society. Therefore, it would be necessary to rethink the organization of the entire school and university system in a perspective oriented towards the integration of digital technology in daily teaching practices. This means, for example, investing in infrastructures (structuring of networks, efficient connectivity, adequate hardware equipment), promoting teacher training on new methodologies and strategies, redefining the paths as well as the possibilities and methods of evaluation.

Among the most significant pedagogical methodologies, we include cooperative learning and problem posing and solving. The other pedagogical foundation of digital interactivity of the so-called millenni-

als is the George Simmens theory of Connectivism.²¹⁰ In particular, the connectivist approach towards the use of Information Computer Technology allows the development on the cognitive level of the ability to identify connections between various sectors and concepts, a skill considered by connectivism to be a core skill, not only for one's own cultural background but also for the development of an active and aware citizenship in the digital world. In fact, the meaning of competence in the use of technologies has undergone a significant transformation over time, also depending on the diffusion of the Web.

We have moved from the European Computer Driving License (ECDL) to the e-Citizenship based on an Information literacy path that indicates the technical skills necessary to access information and services through the Internet in order to be able to exercise one's digital citizenship rights. The concept of digital literacy implies that IT and telematic skills are accompanied by those of participation in the construction and sharing of knowledge; already in 2006 the European Parliament, with regard to the concept of active and conscious citizenship, listed a series of eight key competences for lifelong learning among which learning to learn and digital competence stand out. This is defined as the confident and critical use of information society technology (IST) and thus basic skills in information and communication technology (ICT). Therefore, the new forms of online teaching require a conscious use of social media to learn how to experiment at school and university with original forms of learning and collaboration, capable of creating correlations between school life, virtual life and real life.

Formal and informal learning

Thinking about learning and student participation in the construction of knowledge implies considering the actions taken by the younger generations. We will refer to the forms of collaborative exchange of information. For several years, young people have tended to aggregate socially through digital technology or generate active interactions that tend to build a new culture with their own meanings through formal and informal learning opportunities. Therefore, educators using online teaching

²¹⁰ Siemens, George, "Connectivism," *Foundations of Learning and Instructional Design Technology* (2017).

methodologies should know how to reconcile formal learning strategies with informal learning practices, based on the approach that the so-called digital natives have towards computerized technologies and social software. As previously mentioned, the glossary published by the European Community (Terminology of education and training policy: a multilingual glossary), clearly states that learning "is a process by which an individual assimilates information, ideas and values and acquires knowledge, applied knowledge, skills, attitudes and / or skills that can take place in non-formal, informal and formal contexts".²¹¹

By non-formal learning we mean learning connected to activities that are planned but not explicitly designed as learning. An example could be learning which is not delivered by an educational institution. Informal learning arises from the multiple forms of learning through the experience resulting from the activities of daily life related to work, family, leisure and is not organized or structured and does not lead to certification. A formal learning environment, on the other hand, implies a physical or virtual place intentionally equipped to respond to training needs through pedagogical strategies and didactic devices aimed at promoting, directing and developing learning processes. The new digital technologies allow, in addition to formal learning, training and organizational practices conducted in the workplace (non-formal context), the activation of learning or practice communities built freely by the students and often transmigrated in the Social Software.

In a document entitled "Creating a European area of lifelong learning" of 21 November 2001, the European Commission presents some priorities and strategies including the recognition of qualifications throughout Europe, orientated towards quality, solutions, and innovative pedagogies, as well as the expansion of basic skills and the enhancement of formal, informal, non-formal learning.²¹² In 2009, the Commission and Cedefop published European guidelines for the validation of non-

²¹¹ Galliani, L. "Apprendimento in età adulta, contesti e reti," *Lectio magistralis presentata alla Conferenza ICT and Adult learning. European Agenda on Adult Learning. Torino, IT: Isfol*. 2013.

²¹² European Commission, "Communication from the Commission to the Council and the European Parliament: A Strategic Framework for the External Relations of the European Union." Europa, eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2001:0678:FIN:EN:PDF. 2001.

formal and informal learning which provide policy makers and practitioners with technical tools on validation.²¹³ The guidelines address validation from different perspectives (individual, organizational, national, European) and constitute a practical tool to be applied on a voluntary basis. Together with other tools, credit systems based on learning outcomes facilitate the validation of non-formal and informal learning.

In 2012, in a further document of the European Commission, the "Proposal for a Council Recommendation on the validation of non-formal and informal learning", we read:

We are presented with opportunities to learn every day. Beyond the formal classroom setting, we can acquire the most valuable of knowledge, skills and competences in our daily lives, be it at work, at home or during leisure time. Learning throughout life is a key route to personal development and acknowledging such learning can give greater value to citizen's achievements and their potential contributions to society. Despite this, the influence of traditional forms of education remains strong, with non-formal and informal learning often ignored and undervalued. The 2012 Council recommendation on validation of non-formal and informal learning recognizes this conflict and seeks to promote a more systematic approach to 'validation', to increase the visibility and value of learning taking place outside formal education and training systems.²¹⁴

Among digital natives these informal practices are the result of attitudes originating from the intrinsic characteristics of the new technologies and virtual environments that the natives themselves frequent.²¹⁵ One theory that has conferred formative "dignity" on informal learning is connectivism. Behaviourism, cognitivism, and constructivism are the

²¹³ Cedefop, "Vocational Education and Training in Europe: Current Situation and Challenges," Cedefop, www.cedefop.europa.eu/files/3073_en.pdf. 2020

²¹⁴ European Union. "Directive 2012/22/EU of the European Parliament and of the Council of 13 June 2012 amending Directive 2006/100/EC on the Minimum Safety and Health Requirements for Improved Medical Treatment on Board Vessels," Europa, [eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:32012H1222\(01\) & from=ES](http://eur-lex.europa.eu/legal-content/IT/TXT/PDF/?uri=CELEX:32012H1222(01)&from=ES). 13 June 2012

²¹⁵ Rivoltella, Pier Cesare, *Neurodidattica: Insegnare al cervello che apprende*. Raffaello Cortina Editore, 2012, 8.

three broad learning theories most often utilized in the creation of instructional environments. These theories, however, were developed in a time when learning was not impacted by technology.

According to behavioral theory, learning is the acquisition of habits and associations between stimulus and response. It is studied as a "molecular" fact, that is, by analyzing the connections between inputs and outputs. Burrhus Frederic Skinner is considered the father of behaviorism and from his studies derived much of the experimental data underlying the behavioral theory of learning. The object of Skinner's research was to discover the functional relations which prevail between measurable aspects of behavior and various conditions and events in the life of the organism. The success of such a venture is gauged by the extent to which behavior can, as a result of the relationships discovered, actually be predicted and controlled.²¹⁶ Education and teaching systems that are based on a behavioral view of learning focus on conditioning the learner's behavior: the teacher manipulates changes in behavior using selective reinforcement. The teacher has the role of determining the skills or abilities that lead to the desired behavior and making sure that the students take it in gradually. It is quite obvious that such a teaching or learning system leaves little space and little initiative for students. They can only manage the timing but not the autonomous and creative construction of knowledge. In the mathematical field it may be fine but much less for artistic and humanistic disciplines in general.

According to Watson, behaviors are accepted to be a movement by various muscles. Human behaviors such as speaking, walking, thinking, feeling and such are all composed of movements of nerve system and muscles. Therefore, Watson maintains that concepts such as instinct, motive, conscious, subconscious presented by other theories in order to explain human behaviors are uncertain expressions trying to explain muscular movements and neural activities. Further, learning occurred relates to how an organism establishes a connection between his/her information and cognition about the environment and himself/herself. This idea does not comply with the ideas of Thorndike and Hull, who thought that learning as a strict connection of stimulus-response.

²¹⁶ Delprato, Dennis J., and Bryan D. Midgley, "Some Fundamentals of BF Skinner's Behaviorism," *American psychologist*, 47, no. 11 (1992): 1507.

Edward Chance Tolman made great contributions to the fields of learning and motivation and presented his theory of cognitive learning while working in California University. Tolman developed his own sense of behaviorism in a period when ideas related to learning psychology claimed by J.B. Watson were dominant.²¹⁷ Tolman claimed that learning was related to complex mental processes, not simple mechanic conditioning processes. He did a lot of classical experiments with mice in order to prove his idea. One of his most well-known studies involves maze running. Moreover, he also put emphasis on the role of reinforcer in mice's learning their routes in complex mazes. These experiments caused the birth of "The Theory of Latent Learning" which concerns learning occurring in situations where there is no certain reward.

The third paradigm is constructivism which, according to George A. Kelly, denotes a philosophical position according to which known reality does not precede knowledge but is constructed (or re-constructed) at some level.²¹⁸ The constructivist approach takes into consideration the point of view of the observer or examiner. It considers knowledge as something that cannot be received passively (as an affection of the external world) by the subject, but which results from the relationship between an active subject and reality. Reality, as the object of our knowledge, would therefore be created by our continuous "experiencing" it. We determine it by the way, by the means, by our disposition in observing it, knowing it and communicating it. It is formed in the processes of interaction and through the attribution of meanings to our experience. In these processes, language certainly plays a fundamental role. The "construction" is therefore based on cognitive maps that are used by individuals to orientate themselves and build their own interpretations. In simple terms, each individual constructs his own personal "map of meanings" which allow him to live in what each one experiences as his own world.²¹⁹

Over the last twenty years, technology has reorganized how we live, how we communicate, and how we learn. Learners as little as forty years ago would complete the required schooling and enter a career that

²¹⁷ Cf. Kaya, Zeki, and Akdemir, Ahmet Selçuk, *Learning and Teaching: Theories, Approaches and Models* (Ankara: Çözüm Publishing, 2016).

²¹⁸ Kelly, George A., "A Brief Introduction to Personal Construct Theory," *Perspectives in Personal Construct Theory*, 1 (1970): 29.

²¹⁹ Ibid.

would often last a lifetime. Information development was slow. The life of knowledge was measured in decades. Today, these foundational principles have been altered. Knowledge is growing exponentially. In many fields the life of knowledge is now measured in months and years. One of the most persuasive factors is the shrinking half-life of knowledge. The “half-life of knowledge” is the time span from when knowledge is gained to when it becomes obsolete. Half of what is known today was not known 10 years ago. The amount of knowledge in the world has doubled in the past 10 years and is doubling every 18 months according to the American Society of Training and Documentation.²²⁰ To combat the shrinking half-life of knowledge, organizations have been forced to develop new methods of deploying instruction. Here are some significant trends in learning during the 21st century:²²¹

- Many learners will move into a variety of different, possibly unrelated fields over the course of their lifetime.
- Informal learning is a significant aspect of our learning experience.
- Formal education no longer comprises most of our learning. Learning now occurs in a variety of ways – through communities of practice, personal networks, and through completion of work-related tasks.
- Learning is a continual process, lasting for a lifetime.
- Learning and work-related activities are no longer separate. In many situations, they are the same.
- Technology is altering (rewiring) our brains. The tools we use define and shape our thinking.
- The organization and the individual are both learning organisms.
- Increased attention to knowledge management highlights the need for a theory that attempts to explain the link between individual and organizational learning.
- Many of the processes previously handled by learning theories (especially in cognitive information processing) can now be off-loaded to, or supported by, technology.

²²⁰ Siemens, George, "Elearnspace. Connectivism: A learning Theory for the Digital Ege," *Elearnspace.org* (2004): 14-16.

²²¹ Ibid.

- Know-how and know-what is being supplemented with know-where (the understanding of where to find knowledge needed).
- Compared to behaviourism, cognitivism, and constructivism, connectivism proposes an innovative approach. Connectivism proposes the integration of principles explored by the theories of chaos, networks and complexity for understanding the learning processes of individuals and organizations. The starting point of connectivism is the concept that knowledge exists in itself and that the individual does not need to build it.

Siemens, consistent with the constructionist approach, emphasizes the social character of knowledge but argues further that this can also exist independently of the individual, outside of ourselves (within an organization or database). Personal knowledge, through the network, nourishes the organizations and institutions in which it resides, which in turn have to provide to the learning of the individuals who compose them. The university institution looks like it more could benefit from the connectivist architecture and that in turn could give the best contributions so that connectivism can establish itself as a reliable network of knowledge which develops alongside but above all in the substratum of the already consolidated learning paradigms of behaviourism, cognitivism, and constructivism. If we consider that today many university students are digital natives, we realize the effectiveness of the connectivist approach.

George Siemens's theory of Connectivism offers an interesting pedagogical explanation of the approach to knowledge conceived by digital natives. In particular, the principles of connectivism enunciated by Siemens are:²²²

- Learning and knowledge rests in diversity of opinions.
- Learning is a process of connecting specialized nodes or information sources.
- Learning may reside in non-human appliances.
- Capacity to know more is more critical than what is currently known
- Nurturing and maintaining connections is needed to facilitate continual learning.

²²² Ibid.

- Ability to see connections between fields, ideas, and concepts is a core skill.
- Accurate and up-to-date knowledge is the intent of all connectivist learning activities.
- Decision-making is itself a learning process.

Choosing what to learn and the meaning of incoming information is seen through the lens of a shifting reality. While there is a right answer now, it may be wrong tomorrow due to alterations in the information climate affecting the decision. Considering the principles just mentioned, teaching philosophy online (and any other discipline) implies knowing how to develop opportunities for connective learning. Such occasions should bring together the interests of the different members of a virtual community towards the shared construction of knowledge through dynamic and flexible virtual scenarios, in which the teaching methodology includes different activities:

- case study
- collaborative problem solving
- decision making
- reflection practices
- examination of multiple interpretations
- debates
- web quests
- collaborative work

The connectivist Web was born with the new generation of digital natives accustomed to downloading and shareware.²²³ We are referring to a generation that learns, works, has fun and expresses itself through open and collaborative tools such as YouTube, GoogleMeet, GoToMeeting, WhatsApp, Messenger, etc. The social context of connectivism promotes learning activities that develop under the banner of collaboration:

- Collect: store data, organize resources, select information, create contacts.

²²³ Pérez, María Esther Del Moral, Doina Ana Cernea, and Lourdes Villalustre Martínez. "Scenari connettivisti e progetto di learning object adattabili alla diversità cognitiva." *Italian Journal of Educational Technology* 19, no. 2 (2011): 102-111.

- Reflect: think critically, choose, review information, create paths.
- Connect: spontaneously form work groups, integrate into communities of practice, share goals, values and attitudes, connect information.
- Publishing: sharing experiences, editing documents in different multimedia formats, converting collaborative tools into cognitive tools. All this is enhanced by the collaborative tools that the connectivist web makes available, tools that allow different ways to explore information, contents, resources.

The opportunities provided by the connectivist Web applied to the online teaching-learning process led to a pedagogical reformulation based on which:²²⁴

- Learning is understood as an informal process, characterized by the dynamics of growth and development of the network, in which the contents come from multiple sources, are provided by users and are distributed in different formats and media.
- The key aspect for building knowledge is the possibility of exploiting the synergistic experiences of others, which provides new meaning to learning based on the exploration of information models.
- The concept of collaboration takes on a new dimension, going beyond the simple constitution of learning groups and giving priority instead to connections and fluid interactions in open networks.
- Communication and, therefore, the tools that facilitate it in the connectivist Web are essential for promoting learning.
- Learning takes place in contexts that constantly change and update themselves.

Connectivism, as a theory of learning in the digital age, the result of the analysis of the limits of behaviorist and constructivist theories, takes its cue from the principles of Network Theory to redefine the concepts of knowledge and learning process. Knowledge is distributed through a network of connections as a particular configuration of relations. Learning, consequently, consists in building new connections and new configurations starting from the initial ones, and implies the ability

²²⁴ Ibid.

to go beyond existing networks.²²⁵ In summary, the learning process is characterized by these elements:

- is distributed through a network
- is based on the recognition and interpretation of configurations
- is deeply mediated by the diversity of the network and the strength of its connections
- relies on the adaptability of the connection configurations
- favours the transfer of knowledge starting from connections
- takes ownership of the speed of change of the domains of knowledge.

Learning in connectivist scenarios takes as its starting points the key aspects of constructivist learning theory, underlining that knowledge is built from information networks generated by user communities. However, learning must not be reduced to the mere acquisition of knowledge starting from personal experiences, given that this is a limited view of constructivism, but also derive from the summation of the experiences of others. We acquire our skills when we create new connections. Siemens writes: “learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database), is focused on connecting specialized information sets, and the connections that enable us to learn more are more important than our current state of knowing”.²²⁶ Based on the belief that chaos, produced by spontaneous connections between users and resources, contains meaning, learning is converted into the process of recognizing information configurations. These open information networks are characterized by their permanent transformation due to their uncontrolled development, within which the meaning seems to remain hidden. For this reason, the challenge of the learner centres on his ability to recognize configurations of relevant information.

The connectivist learning scenarios distance themselves from the principles of constructivism as they introduce aspects characterized by the informal conception of processes and an idea of knowledge generation based on spontaneous connections. These aspects shape interactive learning spaces geared towards problem solving and collaborative research, centred

²²⁵ Ibid.

²²⁶ Siemens, George, "Elearnspace. Connectivism: A Learning Theory for the Digital Age," 14-16.

on the learner and aimed at enhancing meaningful learning by facilitating multiple applications and experiences. In these scenarios, users become active members of a learning community, establishing a specific social context and taking charge of their own learning. The scenarios provide feedback or learning guides that serve to orientate users by offering them different training paths. At the same time, they allow users to exploit the synergies of the learning community through the continuous exploration of contents, activating the ability of users to synthesize in recognizing information configurations and connections within the immense volume of resources that are offered. These frameworks also provide users with the ability to create their own content and decide on their learning strategies, giving them total control in making decisions in an ever-changing scenario.

These new scenarios host highly heterogeneous information and are organized through the spontaneous creation of structures and configurations, behaviour and use, within which learning is based on the exploration of new connections and new information configurations. In these scenarios, open to the inclusion of new users and new resources, users can both classify their interactions with the environment and create and modify structures. Not surprisingly, these scenarios facilitate access to shared information and the use of collaborative tools, enhancing group learning, creating knowledge based on the experience of other group members and acquiring skills starting from connections. The importance of the speed of decisions and the processing of new information is clearly underlined by Siemens in the following points:²²⁷

- connectivism is driven by the understanding that decisions are based on rapidly altering foundations
- new information is continually being acquired
- the ability to draw distinctions between important and unimportant information is vital.
- the ability to recognize when new information alters the landscape based on decisions made yesterday is also critical.

The connectivist Web allows for the creation an educational design idea on learning that can enhance the participation of students in the construction of knowledge. This project proposal is based on the following four learning pedagogical themes:

²²⁷ Cf. Siemens, George, "Connectivism".

- Active learning: learning takes place actively, continuously processing and recovering knowledge and generating connections with experiences. These recursive actions allow students, through their actions, to autonomously create new structures of personal knowledge. Therefore, adopting a metacognitive approach is of fundamental importance to keep learning active over time, even beyond school. Students must be led to use personal procedures to control their study actions and their production of knowledge.
- Social learning: effective learning is not an exclusively solitary activity, but essentially a distributed action. In fact, the individual construction of knowledge takes place through processes of interaction, negotiation and cooperation with others. Learning is therefore configured as a social fact since it takes place in a context of relationships, culturally connoted; thus, it emerges that the socio-cultural constructivist learning theory directs the organization of learning contexts in order to express profound cognitive processes in students.
- Collaborative and cooperative learning: the collaborative nature of learning is closely linked to the perspective that emphasizes its social character. Effective learning is not a purely individual activity, but essentially the result of factors "distributed" in the context. Each individual student is involved together with the others, with the resources, technologies and tools that are made available in the context.
- Learning as an experience: The organization of learning experiences is able to educate and train in the profound understanding of processes and dispositions of the mind. Learning experiences, in Dewey's perspective,²²⁸ can now count on the use of software that allows the construction of cross-media knowledge and capable of interpreting individual differences on virtual environments in which to co-build knowledge and operate to extend formal learning spaces.

²²⁸ Miettinen, Reijo, "The Concept of Experiential Learning and John Dewey's Theory of Reflective Thought and Action," *International Journal of Lifelong Education* 19.1 (2000): 54-72.

The context in which the learning will take place implies that:

- students will be assigned individual and social responsibilities;
- different types of positive interdependence will be activated;
- constant interactions must be produced;
- space will be given to moments of reflection, review and evaluation of the processes solicited during the activities;
- the class will be organized as a set of small groups - or couples - who will continually face problems to be solved;
- the resources available to the class, on which everyone can count, the constraints and the shared rules will be defined;
- an evaluation of the pre-established objectives will be carried out in a transparent way and based on shared and verifiable indicators. The previously mentioned learning takes place with the implementation of the open education of the "Four R" through the following phases:²²⁹

Reuse: use of resources "as they are". Reuse consists of the lowest basic level of open education, i.e. it is allowed to use all or part of a work for one's own purposes, such as downloading a training video to watch later.

Revision: modification, transformation, critical re-elaboration of the content-structure in order to achieve the required objectives. That is, you can adapt, modify, translate for example a book written in English and transform it into an audiobook in Spanish.

Remix: integration of the content with other information, external to the initial resources to increase the potential of the new product created. That is, you can extract two or more resources and combine them to create a new resource such as the extrapolation of audio lessons taken from a course and transform them into slides for PowerPoint thus creating a new training resource.

Redistribution: sharing of the work with other subjects via email or social networks, for example, as many students already post notes taken in class or scanned photocopies on Facebook.

²²⁹ Hilton III, John, David Wiley, Jared Stein, and Aaron Johnson, "The four 'R's of Openness and ALMS Analysis: Frameworks for Open Educational Resources." *Open Learning: The Journal of Open, Distance and E-learning* 25, no. 1 (2010): 37-44.

Conclusion

The digital revolution is changing the world more radically and faster than even the Copernican revolution, irreparably altering the understanding of the nature of man as a social and political animal. In the era of the information revolution, the human being becomes a fundamentally informational entity and, similarly, space-time becomes computational space-time as the ultimate fabric of reality. The hermeneutic horizon that opens up in the digital age is therefore inhabited by the concept of information which, like concepts such as being, knowledge, good and evil, is autonomous in its ontological and metaphysical dignity. Furthermore, the same hermeneutic horizon is characterized by the computational 'bit' which is the new archè: the ultimate foundation of language and reality. In other words, the hermeneutic horizon that opens up in the digital era is a horizon characterized by the one that Luciano Floridi²³⁰ calls infosphere, or universe (or already multiverse) of man-informative, or informant, bearer of information, capable of information and capable of changing the surrounding environment with information, just as man a millennia ago changed the environment with the use of the thumb. Such a universe is governed by intrinsic ethical laws which essentially tend to a moral imperative that Floridi summarizes in an informative well-being that must be promoted, extending (quantity of information), improving (information quality) and enriching (variety of information) the infosphere. Now, if it is true that in the digital age man is essentially an informational entity,²³¹ it is clear that the main condition of his essence, that is, Dasein, as Heidegger would say, cannot but coincide with his ability or possibility to give and to receive information and to be in the world (in the world of information, which in this case would coincide with the world, tout-court). In the information and in the possibility given to man to hand it out, one can therefore glimpse the essence of contemporary man, already identified by Bakhtin for whom the existence of man (both the exterior and the interior) is a very deep communication. To be means to communicate. Death (non-being) is the impos-

²³⁰ Floridi, Luciano, *Infosfera. Etica e filosofia nell'età dell'informazione* (Giapichelli, 2009), 40.

²³¹ Cf. Wiener, Norbert, *The Human Use of Human Beings: Cybernetic and Society* (Garden City, New York : Doubleday, 1954).

sibility of being heard, of being recognized, of being remembered.²³² And it can be clearly seen in today's culture, where consistency of the self is often linked to an image that is always managed and assured and amplified by social networks. Analyzing, therefore, the new posture of the human in the infosphere, we come to the awareness that contemporary existence is in fact an *onlife*²³³ existence, where online and offline are in fact overcome or perhaps canceled, because they are engulfed by the collective expectation that for individuals a single condition is reserved: either you are connected, capable of exchanging information (regardless of how you are online), or you are not. The digital dimension leads man towards forms of collective intelligence, which redesigns new social and political identities. They are based not on territorial, geographical, or institutional affiliations but on adherence to common interests and from collective intelligence towards forms of distributed intelligence that it is not by chance that De Kerckhove has baptized as connective intelligence.²³⁴ This connective intelligence is capable of producing a knowledge given by the multiplication of the single intelligences interconnected by a relational network and not by the mere sum and average of them. Connective intelligence reflects the way in which young people of the 21st century relate to each other on the web, beyond any religious, political, or ideological belief. The web allows not only a collective and connective construction of knowledge but above all the emergence of a new consciousness based on collaboration, interconnection and continuous exchange of information: a crucial aspect for an authentic democratic society.

²³² Ibid.

²³³ Cf. Floridi, Luciano, *The Onlife Manifesto: Being Human in a Hyperconnected Era* (Springer Nature, 2015).

²³⁴ de Kerckhove, Derrick. "Connected Intelligence for the Civil Society: the Internet as a Social Limbic System," *Spanda Journal* 5 (2014): 2.