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From Caravaggio to Braque: Digital Technology and the Illusion of Augmented Responsibility

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Abstract. According to the Situational Context Theory, the recent accelerated evolution of digital technology (IoT, Microchips) reinforces the trend of progressive reduction of the physical distances between an ‘Augmented individual’ (technology-empowered subjects playing their daily life decision-making processes based on multidimensional choice-sets) and technology. Technology becomes further more *competent* than the subject in dialoguing with the situational environment, both in the area of information building (search engines) and of location-based dialogue with the daily environment (IoT, NFC, VR). Because of reduced physical distances and the growth in competence of technology, the free-choice based subject’s responsibility, which initially appeared ‘augmented’, in reality decreases and becomes an illusion, quite as the cubism illusionism of Braque and Picasso painting. Indeed, in this frame of work, responsibility appears to shift from the augmented individual to organisations and institutions managing technology with competence, within a frame of a digital technology Corporate Social Responsibility.

Keywords: Multidimensionality • Digital technology ecosystem • Augmented responsibility • Choice-sets • Situational Context Theory (SIT) • Cubism • Digital Technology • Corporate Social Responsibility

The first part of the following study (sections 1-5) aims to explain under an interdisciplinary perspective how the Internet Age society is a complex multidimensional eco-system: the notion of Internet Age ties to the development of Information and Communication Technology (ICT), that is, to the phenomenon of connectivity, complexity and unpredictability [1, 2, 3, 4, 5]. The second part (sections 6-9) tackles the concept of the subject’s decision-making process within the digital eco-system to design an innovative concept of ‘Augmented responsibility’.

1 Complexity

Economics, Physics, Information Theory and Biology contribute to shed light on how the Rational Choice Theory linear approach appears to be unable to comprehend a complex system. Logic patterns operate on linear sequential steps, one related to the other by a cause-effect process. Instead, complex systems accelerated by technology are multidimensional complex ecosystems of digital-physical subsystems.

In October 2008, at a hearing at the American Congress, the former Federal Reserve Chairman Alan Greenspan admitted he had failed to anticipate the self-destructive power of subprime mortgages causing the 2008 financial crisis [6]. The hearing represented an historical step towards the disruption of mainstream neoliberal thought stigmatized by the monetarist econometric models [7]. Indeed, behind the Rational Choice Theory principles [8] inspiring monetarism, mainstream rational linear models appeared to fail the task to provide explanations of the economic, social and political complex techno-system [9]. If a linear model is characterized by only one dimension [10], a complex system is composed by a number of interconnected sub-networks characterized by many dimensions and multiple variables [11]. Statistical Physics, Information Theory and non-linear dynamics study different features of complex systems as the relationships between its parts, the collective behaviors arising by its internal interactions and ultimately the feedforward and feedback relationships with its environment [12]. Depending upon these environmental exchanges, in Thermodynamics, systems are classified as open or closed. An open system exchanges matter and energy with the environment, while a closed system exchanges energy [13]. An example of open eco-system composed of subsystems is provided by the biologist Konrad Lorenz in his book 'King Salomon's Ring'. Lorenz argues that "The aquarium is a world; for, as in a natural pond or lake, indeed as all over our whole planet, animal and vegetable beings live together in biological equilibrium" [14]: plants, animals and decomposers play different roles within the complex eco-system, interacting to make available the great cycle of life. Likewise, the sociologist Luhmann maintains that society is a complex system composed of interrelated parts: it exists within an environment with which it exchanges information or energy under different forms; it is a dynamic system, that is, it implies feedback and feedforward processes with the external environment; it is intelligent at different levels based on its ability to act and reach for a balance with the outside [15]. Society, on the web, is a multidimensional eco-system in interaction with the offline environment, acting like a human organism, dynamically selecting, creating and evolving to satisfy emerging social needs. In the organizational sector, a case in point is Topcoder [16], an online crowdsourcing community with more than 900,000 developers, designers, and data scientists. Topcoder's crowdsourcing marketplace connects designers, developers, and data scientists from around the world with major companies, including IBM, Amazon and NASA to enter challenges and earning prizes. The community-based crowdsourcing business model follows the format of an 'organic cell': it is osmotic to the environment (exchanging ideas with the environment – the community), dynamically selecting, creating and evolving via challenges (hackathons and contests) to satisfy both profit objectives and emerging social needs. This means that it embraces crea-

tivity, innovation, and the next big idea embraces creativity and innovation, rewarding and recognizing the best designers, developers and data scientists for honing and proving their skills. Topcoder is an example of a revolutionary complex business model based on exchange and collaboration.

2 Unpredictability

Sociology and Economics indicate that the loss of order originated by the complexity of the Internet eco-system brings a disruption of power and control systems leading to uncertainty and risk. Individuals have more freedom, less control and more responsibility on their subjective decision-taking processes.

In the Internet multidimensional complex system, predictability appears not to be viable any more. Zygmunt Bauman argues that postmodern global society, because of the processes of fragmentation and individualization, has produced a 'new global disorder'¹. In pre-modernity, order entailed the idea of predictability, allowing persons to safely predict the consequences of their actions. In the Modern Age, the rational linear patterns of the Rational Choice Theory interpreted reality under the theoretical approach of a perfect information and social order. In a complex digital social environment, instead, there is an absence of comprehension, in the Latin meaning of *cum-prehendere*, that is, to embrace all aspects, grasping all rational and irrational sides of subjective action. This view reflects into the concept of a society of uncertainty as predicted by Bauman [18] or, in economics, as predicted by Galbraith [19]. Related to the concept of uncertainty, the father of the theory of risk Ulrich Beck [20] maintains that society itself founds on risk.

In this general condition of disorder and uncertainty, individuals do not act in accordance with the requirements of social roles and have to be responsible for their own actions. In fact, they are not protected nor controlled any longer by the traditional model of community of the Pre-Industrial Age [21]. Indeed, pre-established patterns of social relationship appear to have dissolved (decline of church, political parties and associations, leading to a decline in identity, loss of social civicness, and a general decline in power by institutions [22]), shifting to an Internet-Age model of society, characterized by multidimensionality, more freedom, less control, but more responsibility for one's self decision-making process. This phenomenon reflects into the need of protagonism on the web as a tendency to biographic narrations – as the proliferation of blogs or personal diaries on social networks- and an obsessive search for original performances and contents [2], [20], [23]. Under an organizational and business perspective, unpredictability translates into a general disruption of the mainstream make-or-buy models and increasing difficulties in vision-building, including the loss of meaning of long term planning given the fast pace of environmental change; uncertainty also leads to risks in reputation, given the viral connectivity of the web-, higher

¹ [17] p.49

volatility in investments and a strong need to focus on customers' needs, reflecting in a general shift of power from the brand to the stakeholder [24].

Finally, unpredictability within the relationship between humans and technology is mainly based on the sense of risk (issues of security and privacy) and a lack of trust in technology which may occur when technology fails [25].

3 Connectivity

Thermodynamics, Neurology, Physics, Network Analysis contribute to illustrate how in the Internet the speed of change follows a viral non-linear pattern. Virality develops on networks of connected knots, where space and time are the coordinates of multiple directions. Connectivity and virality appear to be the multidimensional paradigm governing change.

In Thermodynamics, chaotic systems are an extreme example of instable systems, as trajectories of initial conditions diverge over time following an exponential and non-linear ratio². Correspondingly, scientists adopt the 'Hockey stick model' to describe the exponential growth of Internet users along time.

In Neurology [27] as in Quantum Physics [28], space and time are the two variables governing the phenomenon of connectivity. Likewise, in Network Analysis, the connection between nodes defines a portion of space and it occurs in a determined lapse of time, generating a relationship between speed and space. In the Internet, the speed of change by growing at geometric progression follows a non-linear viral pattern: one bank collapses, then other fifty follow; a computer is attacked by a virus, the speed of contagion is impressive; a virus infects a person, the contamination spreads all over the world. Virality appears to be the multidimensional paradigm governing the evolution of the change. Malcolm Gladwell evidences how epidemiology explains the three agents of virality³:

- a. first, contagion. A contagious behavior transmits to other persons in similar contexts. The web space is made of interactions, so contacts are possible among a huge number of persons and contagious behavior spreads.
- b. Second, small changes have big effects. Contagion starts from a small amount of infected units.
- c. Third, speed: change happens not gradually but suddenly.

These three aspects shed light on the issue to govern information given the speed of change, following viral not linear, multidimensional patterns. This pattern may be related to chaos theory [30], where early weak signals, almost indistinguishable, may become suddenly uncontrollable tsunamis at global level. A case in point is company governance and reputation crises sparkled within the digital environment [31] or a video suddenly going viral on YouTube social network.

² [26] p.31

³ [29] p.7

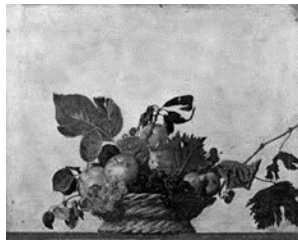
4 Multidimensionality

In painting, as in in multiple domains of human expression we can observe a shift from the monodimensionality and unity of the Modern age to the multidimensionality of the Internet Age.

Thermodynamics defines systems as open or closed in relation to the interaction with the external environment. This classification sheds light on the key role of the context or 'environment' to the comprehension of eco-systems dynamics.

In 1914 Gertrude Stein was walking along Boulevard Raspail with her friend Pablo Picasso. When they saw for the first time a military convoy of mimetic tanks passing by, Picasso uttered: 'We created this. This is cubism!'. It was the beginning of a different way of looking to life, of perceiving reality, it was a multidimensional cubist vision [32].

Cubist painting is a high expression of multidimensionality and an ideal ground to analyse the shift from mono to multidimensionality occurred from Modernity to Postmodernity.



Caravaggio 'Basket of fruit', 1599
(*'Canestra di frutta'*)



Braque 'Fruit Dish', 1908
(*'Plat de fruits'*)

Fig. 1. Caravaggio and Braque Comparative Analysis

If we analyse by comparison the well-known 1600 Caravaggio's picture 'Basket of fruit' with an assimilable subject of the early twentieth century, authored by Braque, several differences emerge (Figure 1). Caravaggio's paint is an exact, meticulous reproduction; reality is represented with absolute fidelity; it is definitely static; it is three dimensions; it requires an exterior analysis from the viewer; it is an extremely objective definition of reality: anyone sees the picture in the same way given its definition. It is monodimensional, in this sense. As opposite, Braque's fruit dish appears almost undistinguishable, as any viewer may subjectively give his or her own interpretation, focusing on one element or on another; reality appears in a subjective way; the object is dynamic, many planes intersect one with the other in multiple dimen-

sions allowing different visions; it is a deconstruction of reality, allowing the spectator to re-construct it in a personal way; Braque's cubist approach asks for a deep analysis, a process of research to provide a personal interpretation to a complex representation of an object. Finally, in the Caravaggio's picture the focus is in the picture itself: Caravaggio wants the spectator to look at the basket as the painter wishes. In Braque's fruit basket, instead, the focus is within the subject standing in front of the painting, that is, outside the picture. In other words, there is an exchange between the external environment (the viewer and his or her context) and the inside (the painting), to reach for a balance of comprehension, a negotiation of meanings. The viewer is free to assign a meaning to the picture.

This example aims to explain how, in painting, the representation of a fragmented, chaotic, and complex reality need to evolve from an objective to a subjective, multi-dimensional pattern. The same process has taken place in many other artistic expressions like Frank Gehry or Daniel Libeskind's architecture, called 'liquid architecture'.

The relevant perspective is that the shift from monodimensionality and unity to multidimensionality takes place in multiple domains of our social life. This process indicates how the global environment has transformed into a complex multidimensional and relational system.

According to Edgar Morin, individuals organize their knowledge into four domains: cultural (humanistic and scientific), social, economic, and political⁴.

During the last decade, in these domains we have witnessed an evolutionary process following a multidimensional pattern. This course has involved many sectors of human action performing as subsystems of a unique wider global system. Domains and sub-domains such as economics, sociology, technology, welfare, politics, science, art, business appear to have followed this process. Some examples for each domain follow (see Figure 2).

In economics, besides GNP⁵, new indicators such as Social Capital or Indexes of well-being measure wealth. Economists such as Stiglitz, Sen, Fitoussi or enlightened scientists as Coleman [34] and Putnam [35] have introduced Social Capital as a global economic parameter. In addition, multidimensional indexes of well-being⁶ are becoming progressively accepted parameter to express the multidimensionality and relativity of the perception of wealth by a population. These evolutions in the measurement of wealth evidence the growing complexity of the set of variables required to explain an environment.

In human sciences, sociologists are moving from holistic and individualistic models towards 'relational models' able to provide an understanding of the postmodern society. Sociology of Relation [36] is a representative new branch of sociology.

⁴ [33] p.19

⁵ Gross national product (GNP) is the total market value of the final goods and services produced by a nation's economy during a specific period of time (usually a year). Available at <http://www.britannica.com>.

⁶ Better Life Index by OECD, available at <http://www.oecdbetterlifeindex.org>.

From Unity and Unidimensionality	→	To Multidimensionality and Relationships
One-dimension Economic Indicators		GNP, Social Capital, other indexes
Individualistic Social Models		Sociological relational paradigm
Mono-directional technological communication devices		Connectivity
Top-down government models		Bottom-up models
Mono-dimensional science theories		Multi-dimensional science theories
Unity of the artistic élites		Free and open artwork-sharing
Vertical bureaucratic organisations		Global networked and hive-net organisations

Fig. 2. The Shift of Paradigm

In communication technology, the Internet has recreated a new online society governed by relations: from traditional offline mass-communication technology as television or radio to peer-to-peer, one-to-one communication, the Internet has allowed the spread of digital relationships.

In welfare politics, the role of governments is moreover giving space to bottom-up forces, as forms of open-government or wikicracy [37]. Many other examples show how e-government solutions, as participative platforms, create highly effective relationship-building programs between institutions and citizens.

In science, theoretical studies are examining the possibility that quantum mechanics may be applicable not only to subatomic particles, but also on a larger scale: this would mean that the microscopic and macroscopic realms interact, evidencing a relational pattern that upset the classical assumptions of Physics, and opening the doors to parallel universes.

In art, ideas once shared among a chosen few belonging to élites, today are constantly produced and shared among a vast public, at zero cost. Pictures, images, videos, pieces of literature are forms of art shared with the vast Internet audience (Instagram, Snapchat, Flickr, Pinterest just to mention some of them).

In the organizational sector, companies are showing how their boundaries are progressively fading, moving towards global hive-net, horizontal, knowledge-oriented structures, by processes of externalization. This shift of focus performs from the centre outward and from unity to multidimensionality. The first, subverts the traditional vertical bureaucratic organizational model; the second, refers to the richness of diversity inside the organisations.

All these elements illustrate the general shift of paradigms from unity and monodimensionality (as one-dimensional economic indicators or individualistic social models) to multidimensionality and relationships (as social capital and connectivity).

This shift affects the relationship between human choice and responsibility in a digital technology context. Below, an introduction to the next section highlights the three conceptual steps tackling this topic:

1. When the device acts as a filter between individuals and situational contexts, multidimensionality affects the subject's decision-making process by enlarging the span of choice-sets (see section 5). An example is the process of creation of a 'wishlist' compared to a traditional offline purchasing act inside a shop (show-cases are Sephora, Gucci and McDonald, focused on wishlists building⁷).
2. Multidimensionality leads to a hyper and self-centred subject, the ideal type of which appears to be a '*Homo Augmentatus*' ('Augmented Individual', see section 6), willing to express herself or himself in original and unique, personalised ways and looking for personalisation. Companies have understood this social priority and respond with customized products. Cases in point are Coke's personalized bottles or the customized Fiat 500, providing customers with a product configurator to design one's own car. Personalisation is also provided by companies through the adoption of evolved business models as the Long Tail allowing an 'endless choice creating an unlimited demand' [38]. A case in point is the iTunes personalised playlist or any mobile's set of apps, personalized according to tastes and needs. Brand marketing adapts to this change by tracking Customer Journeys on the web to understand personal behaviours and provide unique customer experiences; search engines track individuals' search behaviours to provide aligned information or to market data and information to companies indispensable to personalize processes. Offers, products, promotions are in real time aligned to the individual's tastes and experiences.
3. Importantly, the resulting higher grade of freedom of choice and opportunities of the Internet Age leads to an evolution of the concept of the subject's responsibility into an 'Augmented Responsibility' (section 7), where digital technology plays the role of 'augmentator' (enhancer) of human subjectivity.
4. However, as digital technology is showing a definitely superior grade of competency than the human in filtering environmental data and information, the critical appraisal of the augmented individual and augmented responsibility appears to be an illusion. Indeed, technology itself, and organisations behind technology, by selecting, filtering and packaging information show to be taking a great deal of the burden of responsibility. This opens the doors to a new concept of Digital Corporate Social Responsibility.

⁷ See the following videos at: <https://www.youtube.com/watch?v=PhfVFuVprMc> for the Gucci showcase; <https://www.youtube.com/watch?v=EsT04Uop17o> for the MacDonalD showcase; <https://www.youtube.com/watch?v=UfIz0PYyucw> for the Sephora showcase.

5 Physical Distance

The accelerated evolution of digital technology reduces the physical distances between Human and Technology. The more distance gaps reduce, the more the digital device is able to participate to the situational contexts of the individual and provides the subject with growing sets of information and of choice.

According to the Situational Context Theory (SCT) [39] the concept of physical distance allows meanings to be exchanged in an environment where interaction takes place in a particular time and place. The ‘context’ is the situation within which something exists or happens, and that can help explain it [40]. In this conceptual frame, it may be assumed that technology plays the role of interface between the subject and the situational contexts, allowing the exchange of meanings via interaction. Importantly, interaction occurs both with the device and via the device (technological medium). In this section we analyse interaction via the device, thus studying how distance plays a role between the human and the device. In section 7 we will tackle the interaction with the device.

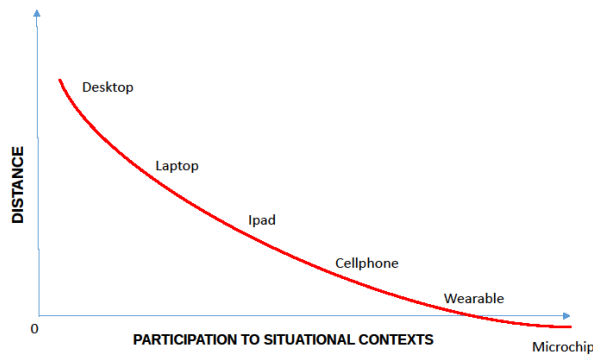


Fig. 3. Devices-Distances-Situational Contexts graph

In Figure 3, the evolution of digital technology from PC to Laptop to Ipad to Nearables and Wearables to Implantables evidences a progressive reduction of the physical distance between the human body and the technological device (H-T Distance) and a growing interaction of the device with situational contexts, also thanks to the introduction of the Internet of things (IoT). This gap reduction relates to the following variables, which we will call ‘Distance-Frequency variables’:

1. Correspondence of the mobility of the device to the individual's mobility (PC is suited to work on a desktop – a cellphone concept is focused on 'mobile'⁸);
2. Body-device physical distance and Frequency of contact: a PC lays on a desktop at about three spans distance from the body (not mobile, low frequency), while a mobile is by definition a handheld⁹ (mobile, high frequency); a wearable smart device follows the rule of the wristwatch and its corresponding frequency of wearing is intended to be higher than a mobile phone [41].
3. Individual-device interaction with situational contexts.

The graph evidences how the more distance reduces the more the device participates to situational contexts and provides information to the user. According to the SCT assumptions, it means that the device plays the role of medium as an interface to exchange meanings with the environment, allowing exchange of information and providing the subject with multiple choice-sets in his or her decision-making process.

The concept of mobility in terms of 'user experience' (UX) is about making content available when and where users want it, as efficiently as possible [42]. Based on the graph analysis and because of the direct relationship between information and choice-sets, we may use the syllogism according to which the more distance reduces, the more choice-sets are available to the device user.

In this explanatory mainframe, we have to exclude Desktops because of their participation to situational contexts restricted to a fixed location and Implantables because of their inability to provide information directly to the bearer, excluding any mindful involvement of the individual.¹⁰ In fact, a basic requirement of a free and responsible choice is the subject free will and awareness key to interact rationally with the device, i.e. to retrieve information on a specific issue. A heart by-pass participates 24h to the individual's situational contexts but the subject cannot interact consciously with the implanted device. Other cases of irrational behaviours as simply looking at the device or touching it¹¹ are excluded, as we are focusing on technology as a mean and not as an end.

⁸ A research by UXmatters has been carried on a random sample via ethnographic methodology. For two months, ending on January 8, 2013, a team of researchers made 1,333 observations of people using mobile devices on the street, in airports, at bus stops, in cafes, on trains and busses. Of these people, 780 were touching the screen to scroll or to type, tap, or use other gestures to enter data. The rest were just listening to, looking at, or talking on their mobile devices. - See more at: <http://www.uxmatters.com/mt/archives/2013/02/how-do-users-really-hold-mobile-devices.php#sthash.ViEsijqL.dpuf>.

⁹ See note 5.

¹⁰ Instead, specific cases of implantables in the health sector connected to mobiles to provide behavioural lines to the patient during daytime, i.e. for diabetes, are included.

¹¹ Other cases of irrational behaviours as simply looking at the device or touching it are excluded, as we are focusing on technology as a mean and not as an end. See note 5.

6 Augmented Individuals

In a Multidimensional environment where Human-Digital Technology distance reduces, ‘augmented individuals’ are technology-empowered subjects enabled to access multidimensional choice-sets in their daily-life.

The void of institutional power entailed by globalization has determined a crisis of the meaning of existence, the disruption of strong references safely determining identity.¹²

According to sociological [43], cognitive [44], behavioural theories [45] connecting the macro with the micro-level, multidimensionality at the macro-level of the complex internet system affects the individual in two opposite directions: the first, in terms of a lack of comprehension of the complex social environment [20], [46], [67] and a perception of risk [47], [20]; the second, in terms of providing a sense of freedom, given the absence of predetermination in social action [48], an impressive access to information and freedom to subjectively make decisions among a growing number of choice-sets. To refer to the Caravaggio-Braque analysis, we are far from the holistic [49] approach of Caravaggio’s objective pattern. Along the same direction, we may say that the Internet Age individual is far from the Homo Sociologicus¹³ of Dahrendorf, qualified by social roles, characterized by a pre-determined action, a limited field of experience and a lack of subjective responsibility in relation to a scarce presence of free expression¹⁴; The Internet Age individual appears also to overcome the Homo Oeconomicus of Hirshman, qualified by personal interest [52] and acting along the mean-end pattern of the costs-benefits comparison (Rational Choice Theory). In fact, the Homo Oeconomicus played its role in the context of the social order of the Modern Age where social positions were distributed and coordinated. Instead, in the multidimensional Internet Age, by lacking those role expectations connected to social positions, the individual ideal type appears to be a ‘Homo Augmentatus’ (‘Augmented Individual’). That is, a hyper-subject, self-centred in the three meanings of: a. Protagora’s ‘antropos metron’, where the human itself is the measure for any human expression; b. under the phenomenological perspective, as opposition to objectivity, c. under the Weberian concept of space of meanings of actions [53].

¹² Throughout the historical phases of pre-modernity, modernity and postmodernity the relationship between the individual and society has been characterised by a progressive disruption of the unitary principles: in Illuminism, rationality; in Idealism, spirit; in Marxism, materialist laws of reality. This process led to a progressive loss of certainty reflected in a loss of power of political authorities, of moral laws, of religious structures. Globalization, by accelerating the processes of fragmentation and de-institutionalisation, has disrupted the State-Nation-Society concurrence [67, 68, 69, 70, 71].

¹³ [50] p.51

¹⁴ [51] p.139

7 Augmented Responsibility

The resulting higher grade of freedom of choice of the Internet Age leads to an evolution of the concept of the subject's responsibility into an 'Augmented Responsibility' or a complex-multidimensional construct, where freedom of the act of choice is exerted by hyper-subjective norms and values.

In section 6, within the definition of physical distance, technology played the role of medium, or mean of interface between the human and the environment. Instead, within the concept of the hyper-subjective Homo Augmentatus, technology is tackled under the relationship with the human. In this perspective of physical interaction with the user, digital technology plays the role of 'augmentator' (enhancer) of human subjectivity. As subjectivity emerges as a process of building the meaning of one's own life leveraging exclusively one's own resources¹⁵ [54], the intimate relationship established between the subject and the technological device [55] lets the device play the role of an empowerer of human cognition by increasing the individual set of resources (choice-sets). Resources provided by the IT to the connected ('always on') Augmented individual allow accessing a remarkable amount of information and choosing various alternatives of navigation to explore the web landscape (platforms, media, channels), designing constantly changing journeys.

The individual will select resources in a conscious, free-will pattern (we will see how this perception in reality is an illusion). Free-will relates to that subjective component of the person represented by reflexivity, autonomy of choosing and originality¹⁶. Reflexivity is a disposition of cognitive nature occurring when "what is relevant to us is the adoption of the standpoint of the first person"¹⁷. In other words, the 'Augmented individual' experiences an 'Augmented responsibility', being the autonomy of choice a disposition of free-will enabling the person to take choices in a relatively independent way. In synthesis, 'Augmented responsibility' refers to an 'augmented individual', centred on himself or herself as a subject, conscious, in a position of wide freedom and empowered by technology to make a choice by applying hyper-subjective norms and values. An example is the process of acquisition of information to purchase an item: the possibilities provided by the web are infinite, considering the opportunities provided by creating forums, or chats, or surveying, or accessing web-sites, social networks and communities or rankings.

8 The Illusion

As a paradox, in contrast with the notion of 'augmented responsibility', digital technology is progressively taking over part of the individual's decision-making processes of information selection. Being more competent than the subject in dialoguing

¹⁵ [53] p.31

¹⁶ [56] p.70

¹⁷ [57] p.171

with the situational environment, it provides focused and selected information, thus limiting choice-sets and generating bounds to the subject's free-will. This reduces the critical appraisal of the augmented individual and subjugates their responsibility making augmented responsibility an illusion. Responsibility, indeed, appears to shift from the augmented individual to organisations and institutions managing technology with competence, calling for a new concept of digital technology Corporate Social Responsibility entailing trust.

Aristotle was the first philosopher introducing the concept of *téchne* (technology). At that age there was no separation between the two components of the concept: knowledge and know-how (*téchne* and *praxis*). Knowledge was a unitary concept, corresponding to the concept of 'art' to Romans, which included different crafts and expertise. Art implied managing knowledge and know-how. Indeed, in the digital contemporary life, it appears that technology has taken over the know-how and is progressively taking over also knowledge, in many fields as in daily-life issues.

In terms of *know-how*, it is a reality how much we are unaware of how simple daily-life objects work. We do not know materials and mechanics of a toaster, a cell-phone, a PC, a TV. Technology, instead, has full competence in this. Being competent, knowing the 'whys' and having power and control over the know-how, it determines a subtraction of responsible free-will to the 'augmented individual'.

In terms of *knowledge*, reality tells us we are delegating much of our knowledge to digital technology: search engines, by leveraging their position of power are competent in filtering the Internet information, releasing it by personalised tracks of past researches. This represents a limitation of the individual's freedom to rationally and emotionally select a choice. It is a progressive reduction of choice-sets, bounding freedom and responsibility and generating a dangerous illusion on 'augmented responsibility'. If this represents a simplification of reality [58] and a positive lift from the cognitive burden of choosing (in some cases, large choice set sizes discourage individuals from making a choice [59]), it has severe ethical consequences. In fact, this process, while providing search engines with more and more focused profiles of the Internet users to be marketed to companies, it dissolves the primitive value of the Internet: the democratic preservation and valuing of different standpoints, to favour a rich diversity [60].

Against a perception of an 'Augmented individual' with 'Augmented responsibility' this other side of the matter appears to be deeply de-responsabilising as it generates a bounded-information. Indeed, bounds are not created by human cognitive and information limitations as in Herbert Simon's economic theory [61]. In our analysis, search engines, via their power and control put bounds to human knowledge, ending up in a possible control of perceived reality. SEO techniques are a case in point, as search engines enjoy a unique position in ranking websites based on variables defined by them. Not questioning the modalities of how algorithms variables are identified and the fact that individuals are to decide which Google page to visit, it is undiscussed that this is a delicate position. Moreover, the fact that that an oligopoly of search engines define the boundaries of knowledge (the total number of page results related to a search term) is a complex and 'sensitive' matter. A search result indicates that an entity has selected information in place of a human, often in sensitive matters, i.e.

religion issues, culture, politics, values. The single individual mostly interested in a specific information ranked as the least relevant for Pagerank, for instance, is virtually excluded to accessing that information.

This scenario of illusion of technological empowerment is moreover relevant as technology by increasing competence via progressively reducing H-T distances (section 6), collects, owns and manages information providing more and more the subject with already packaged, elaborated information and focused to the specific situational need. Examples of location-based dialogue with the daily environment are IoT-based wearables and smart devices, NFC (Near Field Communication, as beacons) and Virtual Reality devices skilled in dialoguing with the environment. IoT is highly competent in collecting information from the human-environment interaction in many sectors as health research¹⁸, investing, insurance.¹⁹

In synthesis, these evolved forms of digital technology transmit an idea of empowerment and improvement of human choice, of efficiency, effectiveness, security and safety. However, this disruption of human bonds, in reality, hides a deep illusion: the illusion of freedom and empowerment of a 'Homo Augmentatus' with an 'Augmented responsibility'. The increasing trend of closing the human-technology gap reinforces the illusion of a 'technology providing a perfect service', like the illusion of a 'perfect information' of the Modern Age Rational Choice Theory. In the Internet Age, instead, the human issue is a lack of comprehension of the full context given the complexity of the online-offline environment (section 1). As in the Cubist Braque's and Picasso's illusion, where abstraction and reality are in conflict, in a Multidimensional reality, the illusion of an 'Augmented Responsibility' clashes with the bounds to human freedom imposed by digital technology.

This concept opens the doors to a new opportunity for technology owners within the Digital Corporate Social Responsibility, with the aim of reaching a sustainable relationship with stakeholders. In the health sector, for example, many are the examples of technology addressing issues in research (health data collected via mobiles [62]), or, in developing countries, in medicine distribution (via drones [63]), helping the community of health workers [64] or providing basic healthcare information in India (via search engines [65]). In this frame, Digital Corporate Social Responsibility has to stay at the core of the strategic process of technology owners to build a *trustworthy* relationship between humans and 'competent' technology. However, competence is only one of the five components of trust. The other four, in fact, are: Integrity, Benevolence, Transparency, Congruence of value [66]. Only if organisations behind technology address all the five concepts, a trustworthy relationship with the humans will be built, probably addressing many issues in privacy and security.

¹⁸ MyHeart Counts' wristbands project collects data to be sent to health research centers via advanced gyroscopes, accelerometers, barometers and other sensors. Available at <https://med.stanford.edu/myheartcounts.html>.

¹⁹ In the Insurance industry, wearables, by tracking customers' activity, allow insurers to keep policy pay-outs down to a minimum.

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