"Don't Break Those Norms"
WhatsApp's Socio-Technical Practices in Light of Contextual Integrity and Technology Affordances

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Abstract

Nowadays, Social Media Platforms, (SMP) are increasingly central in mediating subjects' interaction and communication. The flow of information that occurs in these platforms is governed by legal and technological norms. The technological normativity coupled with the syntactical structure of social media influence the way users share personal information in different contexts thus exerting a relevant role in both the management of human relationships and the construction of personal identity.

This article analyzes the two sided-normativity that characterize a social media platform (WhatsApp) through the Nissenbaum's (2004) framework of "Contextual Integrity", which consider the integrity of information as strictly bound to context, wherein the flow of information is governed by two kinds of norms – norms of appropriateness and norms of distribution.

Furthermore, we deployed an "affordance" approach to investigate the range of possible actions WhatsApp's socio-technical practices leave up to people. We suggest that the flow of information in WhatsApp does not always respect the two norms Nissenbaum foresees as the central tenet of her theory.

We demonstrate how the "socio-technical practices" embedded in these platforms constrain users' ability to exert control over their information thus breaking the contextual integrity considered as a fundamental condition to preserve privacy. We relied on the use Nissenbaum herself made of socio-technical practices intended as "the myriad socio-technical systems, devices, and associated practices that control, manage, and steer the flow of personal information, particularly those that have precipitated radical changes, aroused suspicion, caused anxiety, and drawn protest and resistance" (Nissenbaum 2010, 6).

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Introduction

This paper aims to analyze social media as dynamic contexts in which the flow of information is influenced both by legal and technological normativity (Hildebrandt 2008). The idea that norms can be incorporated in technological devices has been firstly highlighted and remarked by Lawrence Lessig's book *Code and other laws of cyberspace* (1999), where Lessig made it clear that today's normativity is mostly the complex outcome of the co-existence of different normative systems (either competing or collaborating with each other), like law, technology (code or architecture), economy and social norms. Against this backdrop, Lessig remarked, through many examples, how law, as the most deep-seated normative system, is losing ground in respect to market forces and computer code. Even though technological normativity is not a brand-new phenomenon of the cyberspace, yet it deserves deeper investigation insofar people's experience of everyday life is more and more mediated by some kinds of technological interfaces, platforms and devices. In this perspective, social media represent the digital contexts in which most people's interactions occur. This is relevant for three main reasons. First, people spend more and more time in digital contexts. Second, digital contexts shape the way people interact together. Third, people's interactions represent the social dynamics through which people share and make sense of data (raw data are as such meaningless). There is also a recursive and cumulative effect in this ongoing process: every people's interaction produces some more data and contributes to reshaping the context in which it occurs. For this reason, it is increasingly important to shed light on the whole process of *semanticization* that shapes the digital identity of individuals. To clarify this assumption, it is useful to mention Luciano Floridi (Floridi 2010), who writes that:

> «ICTs have made the creation, management, and utilization of information, communication, and computational resources vital issues, not only in our understanding of the world and of our interactions with it, but also in our self-assessment and identity». (Floridi 2010)

Since the construction of our personal identity is an activity mediated by the context in which it occurs, it is crucial to us to study social media platforms as dynamic contexts that shape the way people interact and give meaning to data. Our idea is that this construction is a normative activity, since people are increasingly and often implicitly called upon to handle the ever subtler and fragile distinction between the private and public sphere, between what they want to keep secret or to share in digital contexts. Hence, through the lens of an informational conception of privacy,[1] we scrutinize the flow of information of WhatsApp.[2] Specifically, we deploy the «Privacy as a Contextual Integrity Theory» of Helen Nissenbaum, who addresses the process of *semanticization* of data (declined in terms of information integrity) as strictly bound to the context and further governed by two types of norms: norms of appropriateness and norms of distribution. To do so, we rely on a double methodological approach: first we conduct an in-depth analysis of WhatsApp's privacy policy (legal normativity), secondly, we see how the syntactical structure of the platform (technological normativity) enables or inhibits a certain kind of user behaviors, basing on a set of technology affordances. Finally, we leverage the two constitutive norms of the privacy as contextual integrity theory as a threshold criterion to assess whether WhatsApp's socio-technical practices respect user's information integrity.

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[1] For a complete taxonomy of privacy see Tavani, Herman T. "Philosophical Theories of Privacy: Implications for an Adequate Online Privacy Policy." *Metaphilosophy* 38(1) (2007): 1–22, and Solove, Daniel J. "A Taxonomy of Privacy." *University of Pennsylvania Law Review* 154 (3) (2006) p. 477, Available at SSRN: https://ssrn.com/abstract=667622.

[2] WhatsApp Messenger is a proprietary, cross platform instant messaging subscription service for smartphones that count more than one billion users worldwide. It uses the internet for communication and in addition to text messaging, users can send messages, images, video and audio media as well as their location.

Legal and Technological Normativity

According to Mireille Hildebrandt (2008), normativity is associated with social norms that have been either deliberately issued for or tacitly developed in the practices of a certain community/collective. In both cases norms can be equated with «constraints that *induce* or *enforce* certain types of behavior while *inhibiting* or *ruling out* other types of behavior»[3] (Hildebrandt 2008, 172). This view of legal normativity sets forth classes of action that an individual can abide by or not. Norms neither enforce people to behave in a certain manner nor they give away people with absolute freedom of action. Norms prescribe something, then leaving interpretation up to individuals. Hildebrandt explains this aspect recalling the difference between regulative norms and constitutive norms. She discriminates «between legal rules that are preconditional for – constitutive of – certain legal actions or legal facts, and rules that regulate existing actions or facts» (Hildebrandt 2008, 171). Regulative norms require an individual to comply with a certain kind of behaviors yet not voiding the legal facts resulting from their non-abidance. It is the case, for example, of a person who does not pay taxes. While his behavior violates the norm prescribing citizens to pay taxes, he still is and remains a citizen, thus not invalidating the legal fact of being a citizen. A constitutive norm instead, prescribes an individual to espouse a certain behavior in order to validate those «institutional facts, which are constituted by social interaction» (Hildebrandt 2008, 172). For instance, a person who has not been baptized, is prevented to wed in church, being baptism a constitutive norm to be a Christian. Taking into account that normativity is based on people's freedom of action, it further constructs our knowledge of the (legal) world through the mediation of the written (Durante 2013). Since legal normativity has been mediated by the script thus bypassing face to face relation, this aspect opened the door to the interpretation of law by people. To explain this aspect Hildebradt (2008) recalls the example of the script:

> «Written text is the externalization and objectification of the spoken word, bringing about the need for interpretation. Absent ostensive reference, the author is never sure how her text will be understood, while the reader cannot take for granted what the author meant to say». (Hildebrandt 2008, 170)

An aspect deemed responsible to broaden the distance between the author and the public. Indeed, the fruition of knowledge is no longer constrained by spatial and temporal dimension, which once were considered necessary conditions of knowledge diffusion by means of the "spoken word". Thus, what's new with the technology of the "written word" is a spectrum of possible action left up to an individual. In this sense, technological normativity can be conceived as a *constraining affordance*. An example may be useful to clarify this concept.

Let's consider the case of an author lived before the invention of Gutenberg's mechanical movable type printing press. The author in question would have had two main options once his work was done. The first standing in the possibility to publicly spread his work by means of the "spoken word"; the second in the possibility to keep his work private. In the first hypothesis, the disclosure of the author's work is meant as an opportunity to share it with the public. In such case the disclosure would have brought about a twofold outcome: the exclusivity of the disclosure act (excluding everyone but those gathered in that place), loaded with Benjamin's *hic et nunc*, would have in turn ignited an inclusive act of collective memory construction among the attendees. In such circumstance, a collective state of consciousness towards the author's work would emerge and be shared among the attendees thus championing McLuhan's (McLuhan 1995) claim that: «The spoken word does not afford the extension and amplification of the visual power needed for habits of individualism and privacy» (McLuhan 1995, 79). Let us put now the case in which - after the introduction of the Gutenberg's printing press - the author's work would have been spread through the "written word". In this case the different technological mean of diffusion (the written word) on which the disclosure act relied upon would have brought to a different type of relationship. The previous terms of the issue would be reversed: the inclusiveness of the disclosure act (laying on a greater diffusion) - with the consequent reification of the *hic et nunc* -

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3 Italics by the author.

would lead to a subjective and private state of consciousness, thus denying the construction of a shared collective memories. The previous example shows that the "spoken word" both *constrains* and *affords* a different degree of inclusivity. The same holds true for the "written word".

As we have already observed, technological normativity[4] embodies certain norms that represent «the way a particular technological device or infrastructure actually constrains human actions, inviting or enforcing, inhibiting or prohibiting types of behavior» (Hildebrandt 2008, 173). In the next section, we will examine what *constraining affordances* are and to what extent their concept might be useful to make sense of the flow of information in social media platforms.

What Are "Constraining Affordances"?

Let us make it clear what do we mean by "constraining affordances" in the present paper. *Constraining affordances* is a locution composed of two words holding a dichotomic stance. The Oxford dictionary described the first term as follows: «Compel or force (someone) to follow a particular course of action».[5] The word affordance regards: «A property of an object or an aspect of the environment, especially relating to its potential utility, which can be inferred from visual or other perceptual signals; (more generally) a quality or utility which is readily apparent or available»[6]. While the first term of the locution does not imply a particular complexity, the second one deserves deeper attention for its novelty and for the erroneous use made in recent years by researchers.

The term affordance was first coined by perceptual psychologist J.J. Gibson (1979), who intended an affordance in terms of a range of *possible actions* available in the environment. According to this view, an affordance exists independently from people interacting with it. The term was then conceptualized by Norman (1988) in the design and human-computer interaction field. According to Norman's perspective the nature of an object informs how it should be used. Other scholars consider an affordance bound to the individual direct interaction with a certain technology. A process leading to a sort of adaptation that can influence the actions people take with technologies (Gaver 1991; Leonardi, 2011). Joanna McGrenere & Wayne Ho (2000) suggest that the main difference between Gibson and Norman's definition of affordance is that while «for Gibson an affordance is the action possibility itself whereas according to Norman's use it has been both the action possibility and the way that that action possibility is conveyed or made visible to the actor» (Joanna and Ho 2000). A middle ground position in the affordance literature is that suggested by William Gaver (1991). He considers the design of an object, or its materiality as information that specifies the affordance. The door handles represent a kind of "nested affordance" that has the scope to inform people about accessibility which represents an affordance of the door.

This short yet incomplete review on affordance uses helps us ascertain an important aspect: the significance of affordances varies across different disciplines. For instance, in Gibson's ecological psychology an affordance is considered in terms of perception, while in Norman's design and HCI perspective an affordance is more bound to the materiality of an object suggesting certain kind of uses. An attempt to reconcile the use and application of the concept in communication and technology research has been recently spent by Sandra K. Evans *et al* (2017). Through an extensive analysis of 82 communication-oriented scholarly works using an affordance approach, they were able to identify three main inconsistencies leading to a misguided use of the term. They established three threshold criteria every researcher using an affordance approach should address. The first threshold criteria (Evans *et al* 2017) specifies that an affordance is neither an object nor a feature of the object. This aspect sheds light on the importance to recognize the relational aspect between affordances and agency when it comes to technology use. In this respect it is worth mentioning what Gale Parchoma (2014) suggests while considering that «affordances neither belong to the environment nor the individual, but rather to

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[4] For an extended discussion of the main differences between technological and legal normativity see Durante, Massimo. "Law, Normativity, and the Writing. Oracle Night and Human Indeterminacy." In *Human Law and Computer Law: Comparative Perspectives*, edited by Mireille Hildebrandt & Jeanne Gaakeer, 163-164. Dordrecht: Spinger, 2013.

[5] Retrieved online at: https://en.oxforddictionaries.com/definition/constrain.

[6] Retrieved online at: https://en.oxforddictionaries.com/definition/affordance.

the relationship between individuals and their perceptions of environments» (Parchoma 2014, 361). The second threshold criteria (Evans *et al* 2017) states that an affordance must not be confused with an outcome. To clarify this second criteria, Evans *et al.* suggest the example of someone locating a new neighbor's picture on social media. Established that the goal is to find a picture, one might argue that social media affords viewing a user's profile picture, conversely social media «affords increased visibility and searchability of content, which leads to locating photographs» (Evans *et al* 2017). In other words, searchability and visibility are affordances that set a relation between an object and an outcome by means of action. This aspect is clear if we consider that an affordance can be the same for more than one person yet carrying different outcomes. The last threshold criteria (Evans *et al* 2017) suggests that an affordance should be considered in term of variability. In their review of communication and technology studies Evans *et al.* observed a wrong attitude in considering affordances in binary terms. We have already mentioned this aspect reminding Gibson's reference. For instance, if we consider inclusivity in respect to a certain kind of technology we cannot rely on a binary stance that fully affords or constrains it.

In this work, we consider affordances as resources-enabler-informational entities activated through people's agency. This approach to *constraining affordances* considers technology in terms of its epistemic impact over society (Durante 2011). The fast and huge diffusion of ICTs is not only setting new ways for people to interact, but it is also changing the environment itself through a process of "*re-ontologization*".[7] In this brand-new environment (*Infosphere*)[8] a semantic approach towards information is what Luciano Floridi (2007) advocates for to comprehend the «new *Weltanshaung* that might be dawning on us» (Floridi 2007, 59). The "*Infosphere*" brings about individuals to become information agents. In such a realm it is increasingly important to understand the process that turns data into meaningful information. According to Floridi's epistemological levelism an information agent is able to access a physical or conceptual environment through a Level of Abstraction.[9] To explain what a level of abstraction is Floridi recalled the example of wine made by Pierre Gassendi in *"Fifth Set of Objections to Descartes's Meditations"*:

> «If we are asking about wine, and looking for the kind of knowledge which is superior to common knowledge, it will hardly be enough for you to say 'wine is a liquid thing, which is compressed from grapes, white or red, sweet, intoxicating' and so on. You will have to attempt to investigate and somehow explain its internal substance, showing how it can be seen to be manufactured from spirits, tartar, the distillate, and other ingredients mixed together in such and such quantities and proportions». (Floridi 2011, 50)

Conceptual and physical environments may entail different levels of abstractions through which an individual makes sense of objects and data. In the wine's example Floridi argues that the observables[10] used in the context of wine tasting may be the same of that used in 'tasting sheets':

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[7] "Reontologizing is another neologism that I have recently introduced in order to refer to a very radical form of reengineering, one that not only designs, constructs, or structures a system (e.g., a company, a machine, or some artifact) anew, but that fundamentally transforms its intrinsic nature."
Floridi, Luciano. "A Look into the Future Impact of ICT on Our Lives." *The Information Society: An International Journal*, 23:1(2007): p. 60. doi:10.1080/01972240601059094.

[8] "Infosphere is a neologism I coined years ago on the basis of "biosphere," a term referring to that limited region on our planet that supports life. It denotes the whole informational environment constituted by all informational entities (thus including informational agents as well), their properties, interactions, processes, and mutual relations. It is an environment comparable to, but different from, cyberspace (which is only one of its subregions, as it were), since it also includes offline and analog spaces of information."
Floridi, Luciano. "A Look into the Future Impact of ICT on Our Lives." *The Information Society: An International Journal*, 23:1(2007): p. 59. doi:10.1080/01972240601059094.

[9] "A level of abstraction (LoA) is a finite but non-empty set of observables. No order is assigned to the observables, which are expected to be the building blocks in a theory characterized by their very definition. An LoA is called discrete (respectively analogue) if and only if all its observables are discrete (respectively analogue); otherwise it is called hybrid." Floridi, Luciano. *"The Philosophy of Information."* Oxford: Oxford University, 2011, p.52.

[10] "An observable is an interpreted typed variable, that is, a typed variable together with a statement of what

«nose (representing bouquet), legs or tears (viscosity), robe (peripheral colour), colour, clarity, sweetness, acidity, fruit, tannicity, length, and so on, each with a determined type» (Floridi 2011, 50). Thus, from this example we can assume that same observables can attain to different levels of abstraction. This consideration reflects how individuals are constrained by conceptual and physical environments when the *semanticization* of data occurs. According to this perspective a constraint holds an epistemic value since:

> «A constraint (…) does not merely delimit the possibilities; it is also an opportunity. It is not simply imposed from the outside onto a pre-existing reality, but participates in the construction of an integrated structure and determines in the light of a particular occasion an entire spectrum of intelligible new consequences». (Prigogine and Stengers, 1981)

Floridi extends the conception of *constraining affordances* asserting that '*data are relata*' in the sense that:

> «Understood as relational entities, data are constraining affordances: they allow or invite certain constructs (they are affordances for the information agent that can take advantage of them) and resist or impede some others (they are constraints for the same agent), depending on the interaction with, and the nature of, the information agent that process them». (Floridi 2011, 87)

In the context of this study we endorse a specific aspect of Floridi's epistemological levelism: namely, that one focusing on aspects pertaining conceptual and physical environments bound to social media platforms.

In the next section the *constraining affordances* of data will be analyzed in respect to privacy as contextual integrity theoretical framework. Nissenbaum's theory will help us observe how the flow of information mediated by the socio-technical practices of instant messaging app (WhatsApp) constrains or affords individuals to preserve the contextual integrity of their information.

Nissembaum's Theory of Privacy as Contextual Integrity

In order to fully understand Helen Nissenbaum's theory of Contextual Integrity (2004, 2010) we ought to briefly recall the difference between a descriptive conception of privacy and a normative one. This distinction is fundamental to deal with what Helen Nissenbaum named the issue of privacy in public. Such aspect is not only declined in physical term but is increasingly at stake in relation to today's spread of social media platform, or "socio-technical system" (to recall Nissenbaum's terminology).

The interconnection of people at a fast and growing pace, has brought to the rise of what Microsoft researcher danah boyd (2011) called "networked publics". In this brand-new environment, a clear distinction between private and public situations is increasingly untenable. Hence dealing with privacy either in term of "restricted access" (Moor 1991) or "limited control" (Tavani, Moor 2001) over people's private information no longer fully accounts for the complexity of privacy issues nor it grants people full protection against assaults to their privacy. That is mainly due to the fact that the multifaceted nature of relationships and interactions make it difficult for people to have control over their personal information; moreover, people are challenged by the fact that is also impossible to be aware of who is seeking access to their information. Thus, Nissenbaum builds upon the following question to develop her theoretical framework.

To what extent an individual can benefit from a certain degree of privacy within an environment that has public features? At a first glance, it may seem a counterintuitive claim.

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feature of the system under consideration it represents. Two observables are regarded as equal if and only if their typed variables are equal, they model the same feature and, in that context, one takes a given value if and only if the other does." Floridi Luciano. *"The Philosophy of Information."* Oxford: Oxford University, 2011, p. 48.

Undeniably, what is commonly defined as public space leaves no room to any expectation of privacy neither in terms of seclusion nor in terms of non-intrusion into an individual's private sphere.[11] Nissenbaum rejects such a self-evident assumption, by suggesting a distinction between a descriptive and normative conception of privacy. According to the descriptive view, the exclusive presence of someone in a public space is a sufficient condition for an individual to enjoy a certain degree of privacy, despite the publicness of the space. For instance, it might be the case of a naked person walking in a public square at midnight. In this case, the absence of other people is deemed a sufficient condition to enjoy privacy. The normative view, instead, refers to those situations in which the expectation of privacy is established artificially through the recognition of a private space of confidentiality. James Moor (1991) expressed this distinction by setting the difference between *naturally-private* situations and *normatively-private* situations. Nissenbaum's theoretical privacy framework is mainly informational because an individual's privacy expectation relies on the possibility to exert any sort of ontological friction to «oppose the information flow within a region of the *Infosphere*» (Floridi 2005, 186). Yet information does not have an intrinsic value, but it becomes meaningful when situated in a specific context. This aspect is a central tenet of Contextual Integrity. Indeed, Nissenbaum builds her theory on the assumption that «it is always the situation or the zone, not the kind of information itself, that is used in determining whether information should be normatively protected» (Tavani 2007, 15). Such aspect has been further illustrated by Ferdinand Schoeman:

> «What makes information private or intimate for a person is not just a function of the content of the information; it is also a function of the role the information plays for the person. One facet of this role is that the information is to be regarded as special and thus only revealed in certain contexts—contexts in which the very giving of the information is valued as a special act, and where the information so given will be received sympathetically». (Schoeman 1984, 405-406)

Given this preliminary account, let us see now what the main determinants of contextual integrity are. Contexts are not neutral, yet they are governed by norms derived from multiple sources such as history, culture, law and convention. These sources define the norms which in a particular context *constrain* or *afford*, *regulate* or *constitute*[12] certain type of behaviors and actions.

People are not fixed and their characters not immutable, yet they are active players in the daily interaction with others. This aspect resembles Erving Goffman's metaphor of the theater performance in his seminal work "*The Presentation of Self in Everyday Life*". According to Goffman (1956) an active, relational and contextual management of the self is a practice people undertake daily in order to be perceived by others in a manner consistent with their expectations. This consideration has been deeply influential in Nissenbaum's theoretical framework. Indeed, she built her theory on a specific definition of context:

> «By contexts, I mean structured social settings with characteristics that have evolved over time (sometimes long periods of time) and are subject to a host of causes and contingencies of purpose, place, culture, historical accident, and more». (Nissenbaum 2010, 130)

Then two types of informational norms are identified as necessary conditions to preserve the contextual integrity of information: norms of appropriateness and norms of flow or distribution. Norms of appropriateness focus on a criterion of relevance, where the process of *semanticization* with which people attribute meaning to information is sensitive to the variation of the context in which originally or conventionally the information has been produced, used and disseminated. These norms "circumscribe the type or nature of information about various individuals, that, within a given context, is allowable, expected, or even demanded to be revealed" (Nissenbaum 2004, 120). The second set of norms Nissenbaum envisages are the so-called norms of flow or distribution. The recognition of this second type of informational norms has been influenced by

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[11] On the difference between esclusion and non-intrusion conception of privacy see Tavani, Herman T. "Philosophical theories of privacy: Implications for an adequate online privacy policy." *Metaphilosophy*, 38 (2007): 1–22. doi:10.1111/j.1467-9973.2006.00474.x

[12] See the above-mentioned distinction between regulative norms and constitutive norms.

Michael Walzer's book: *Spheres of Justice: A defense of pluralism.* In his work Walzer (1983) develops a theory of distributive justice in terms of "complex equality". According to this theory societies are constituted of multiple distributive spheres. Each sphere is defined by a social good that is distributed according to principles peculiar to the sphere itself. Different spheres having different goods are featured with different distributive criteria.

In Nissenbaum's contextual integrity the principles that govern goods distribution in a particular context are understood in terms of norms of distribution. An example may help clarify this second set of norms. For instance, in the context of a doctor-patient relationship we can observe how confidentiality is the distributive norm that "regulates" the flow of information, being the patient's health the social good attached to this sphere. In the event that a doctor passes patients' information to drug companies the norm is considered broken. The distribution of information in fact, depending on the relationship between the subjects located in a context for a purpose or a need, is focused on the setting of particular socially recognized configurations. Nissenbaum's theory is of great utility because it embraces an informational perspective of privacy. Contextual integrity holds that people ascribe meaning to data (*semanticization*) within different conceptual and physical environments.[13] These environments are governed by a set of norms that endorse a relational setting. Indeed, the *semanticization* process which endow data with meaning is fundamentally relational.

Given a set of data [constraining] affordances, in the next section we will test this theoretical assumption confronting the socio-technical practices of an instant messaging app. We will explore how the technological normativity of a social media platform constrains or affords the flow of information thus preserving, or not, contextual integrity.

"Constraining Affordances" of Social Media

Social media facilitates the interactions and the development of new relations between people. At the same time the boundary between online and offline spaces as well as that between public and private space are blurred. Microsoft's researcher danah boyd considers "networked publics" the brand new relational setting of this enriched environment.
She describes networked publics being characterized by the following features:

> «Networked publics are publics that are restructured by networked technologies. As such, they are simultaneously (1) the space constructed through networked technologies and (2) the imagined collective that emerges as a result of the intersection of people, technology, and practice». (Boyd 2011, 39)

Boyd asserts that the bit-based nature of social media contents plays an influential role in shaping the way people engage and interact in these spaces. We have previously seen how norms are embodied in technology as expression of their syntactical structure, that in turn inscribe people's behavior in a range of possible actions. Such aspect is central if we consider data as constraining affordances.

The conceptual review about the use of an "affordance" approach in communication and technology research helped us to assess whether the affordances we deployed in this study respected the threshold criteria identified by Evans et al. Hence, we benchmarked boyd's "affordances" (regarding the properties of bits data) against the three threshold criteria. The result is that the selected affordances are neither features of an object, nor an outcome, while, conversely, all of them hold variability.

Boyd identifies four principal bit-based content affordances that are characteristic of networked public (social media):

- *Persistence*: networked technologies make data stick around.

- *Replicability*: content made out of bits can be duplicated.

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13 On this aspect see Floridi's constructionist view of the world according to which «knowledge neither *describes* nor *prescribes* how the world is but *inscribes* it with semantic artefacts».

- *Scalability*: the potential visibility of content in networked publics is great.

- *Searchability*: content in networked publics can be accessed through search.

In our analysis, we will skip searchability because such an affordance is not a central tenet of WhatsApp IM service (allowing only in-app searchability of content in private and group chat). Yet the decision does not affect the validity of our assumption (related to consider WhatsApp as social media) because WhatsApp respects Andreas Kaplan and Michael Haenlein (2010) famous definition of social media as «Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User Generated Content» (Kaplan and Haenlein 2010, 61). We retained not to consider WhatsApp as a social networking site since it lacks a fundamental feature of this kind of platforms, namely the creation of a personal profile. Indeed, according to dana boyd and Nicole B. Ellison:

> «While SNSs have implemented a wide variety of technical features, their backbone consists of visible profiles that display an articulated list of Friends who are also users of the system». (boyd and Ellison 2008, 211)

Given this preliminary account of bit-based content affordances we will now test whether they potentially constrain or afford contextual integrity of information looking at WhatsApp's socio-technical practices.[14]

Persistence

> «Persistence refers to a category of temporal affordances that can influence user experiences on social platforms by prolonging the accessibility of social information». (Bayer *et al* 2015)

WhatsApp's socio-technical practices make data stick around. Two main practices are at stake when it comes to persistence of data. WhatsApp's default practice is to store data on users' own devices. Only in case a user is offline thus making the delivery of a message not possible, WhatsApp retains it for a period of 30 days. While both practices entail the storage of user data the second occurs from the shortcoming of the first. Indeed a 30-day span to deliver a message is an odd practice for the very nature of an instant messaging app. Being WhatsApp based on a near-synchronous mean of communication such socio-technical practice brings about different outcomes in terms of contextual integrity. Messages, photos and videos uphold different meanings if consumed in a different context and time. Furthermore, the type of relationship running between the sender and the recipient of a message has to be considered. Karen Church and Rodrigo de Oliveira (2013) have shown, for example, that while the nature of a WhatsApp-based conversations tend to be more social, informal and conversational, conversely a SMS-based conversation tend to be more appropriate in formal contexts because reliable and privacy preserving. Such aspect has been further confirmed by Carmen Maíz-Arévalo (2015) which argues that in formal contexts a transactional use of computer mediated communication tends to prevail, while informal contexts tend to privilege interactions and a register of communication more prone to make use of capitalization, abbreviations, acronyms or imitations of register.

Social situations may uphold different relationships among individuals. The synchronous type of communication featured with WhatsApp may not respect the norms of flow or distribution required in certain contexts. Indeed, the kind of communication allowed by WhatsApp, and in general any instant messaging app, does not fit for those contexts such as the workplace environment where confidentiality is to be considered a distributive norm regulating the flow of information. For instance, Anabel Quan-Hasse *et al.* (2005) have shown that the use of IS app in the context of a high-tech firm exacerbates the distance between employees and superior. Other researchers have shown how the use of instant messaging services in context with well-defined

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[14]We relied on the socio-technical practices present in WhatsApp's Privacy Policy. https://www.whatsapp.com/legal?doc=privacy-policy&version=20160825&lang=en.   Retrieved: 20/02/2018.

boundaries enables certain kinds of communicative processes outside the very exchange of information.

Bonnie A. Nardi *et al.* (2000) called such a practice "Outeraction". They suggest that IM use in the workplace context might trigger communicative practices that anticipate the very exchange of information. Checking one colleague availability is an example of such a practice. But what is really worth noting in Nardi et al's research is that instant messaging use was bound to desktop terminals. Indeed, their study dates back to 2000 when smartphones and instant messaging apps as we know them today did not yet exist. This let us argue that when information persists in a stable context (e.g. Workplace) it affords more contextual integrity than in a flexible environment.

The persistence of bit-based content on WhatsApp, but again in IM services in general, may also activate a process of psychological self-perception that leads to better intimacy. Such an event occurs whether the persistence of the content matches with reciprocity in the act of disclosure. For instance, it is what has been shown by Joseph B. Walther *et al.* (2016) in the context of Computer Mediated Communication (specifically on an IM service called IceChat). Persistent contents also influence the kind of relationship people do establish on social media.

Such a consideration can be observed in Floridi's definition of «informational privacy [as] a function of the ontological friction in the infosphere» (Floridi 2005, 187). An endeavor to assess user's enjoyment of a certain degree of privacy can be made by ascertaining the presence of the so called ontological friction intended as those «forces that oppose the information flow within (a region of) the infosphere» (Floridi 2005, 186).

Ephemerality of data may be one of those forces in the context of IM services that oppose the information flow.

In this perspective ephemerality (lack of persistent contents) of information is considered a form of informational friction. Joseph B. Bayer *et al.* (2015) have shown, for example, that ephemeral information coupled with selective sharing practices in Snapchat lead to users partaking of more spontaneous experiences with trusted ties (a similar conclusion is upheld by Piwek and Joinson 2016). Moreover, youngsters are more prone to share their own vulnerabilities with other peers when data are ephemeral. Such a consideration has been proven to be true by Jette Kofoed and Malene Charlotte Larsen's (2016) research on snapchat. Thus, recalling Gaver's concept of nested affordances we can assume that the persistence of data allows people to constantly access them. Long lasting accessibility may lead to situation where misinterpretation of data can break contextual integrity of information.[15]

Replicability

«Privacy management is not about setting rules and enforcing them; rather, it is the continual management of boundaries between different spheres of action and degrees of disclosure within those spheres. Boundaries move dynamically as the context changes. These boundaries reflect tensions between conflicting goals; boundaries occur at points of balance and resolution». (Palen and Dourish 2003, 133)

Replicability of contents is a very hot issue when it comes to contextual integrity. Technologies such as smartphone enable people to download, archive and replicate contents falling outside the original context of production. Such an issue is at stake, for example, in the tension between past and future disclosure of contents. The *semanticization* process by which we make sense and give meaning to data is something dynamic that is influenced both by location and temporality.

IM services' socio technical practices may result in informational wrongdoings in the case that information is consumed and transposed beyond the temporal and spatial boundaries that once prompted its flow among users. When it comes with replicability affordance practices such as downloading, duplicating and cross-sharing someone's information can harm people if its diffusion does not comply with the norms of flow typical of a particular sphere. Try to figure out the sphere bound to father and mother relationship. If we consider the social good of this sphere the children's

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[15] WhatsApp has recently updated its service by introducing the recall and delete function which allow users to delete chat, group message and media in a 7-minute time span. See The Next Web available at: https://thenextweb.com/apps/2017/10/27/whatsapp-now-unsend-feature-lets-delete-drunk-texts/

wellbeing openness is the distributive norm that regulates the flow of information among the parents.

All the discussions occurring within this sphere are aimed at favoring the children's well-being, thus confidentiality and secrecy are norms commonly not regulative of wife-husband relationship (at least for what concerns children). Now, consider the case they decide to divorce. While the distributive norm remains the same for what concerns the mother-father relationship (openness), the replication and disclosure of information into another sphere (parent-children relationship) to wreak vengeance over the divorced partner, may cause harm by breaking the contextual integrity of the information. In this example, we can observe how the appropriateness of an information once disclosed within a specific sphere is influenced by the temporality of the disclosure act and the redefinition of the boundaries justifying the flow of information in a new context. This issue is at stake in WhatsApp when the screenshotting of contents may cause the break of contextual integrity if shared in contexts falling outside appropriate space and time.

Telegram, for example, overstepped this risk by providing people with features aimed at overcoming such disrespectful practice by means of visibility. For instance, in case a recipient takes a screenshot of a sender's message, picture or whatsoever contents, the latter receives a notice about the recipient's taken screenshot.

The visibility of people's actions on social media platforms (call it a norm of transparence) has been suggested by many scholars as a pragmatic remedy to empower people's privacy management.

Kobsa *et al.* (2012) suggest for example that accrued visibility «of one's actions to oneself, [to] give IM users a better understanding of their own activities than is the case today, where those activities have to be remembered» (Kobsa *et al.* 2012, 367). The importance of making actions visible has been further shown by Sameer Patil and Alfred Kobsa (2010) running an experiment that consisted in developing a plugin allowing better control and visibility over information disclosure. Visibility of actions can afford people (in regard to replicability of content) with what Leysia Palen and Paul Dourish (2003) defines our "reflexive interpretability of action". Indeed, a reflexive attitude is of great importance to help people assess whether their peers can be trusted or not. The kind of trust that as stated by Massimo Durante is a necessary condition to set «a context of communication, made up of trustful relations, in which young people's identities can be validated by other peers» (Durante 2011, 615). Instant Messaging services such as WhatsApp require people with a constant and recursive process of trust assessment. Thus, making user's action visible may contribute to foster a trustable context of communication that respect appropriateness of context and flow of information according to proper distributive norms.

Scalability

 «Social media blur boundaries between presence and absence, time and space, control and freedom, personal and mass communication, private and public, and virtual and real, affecting how old patterns should be understood and raising new challenges and opportunities for people engaging others through new technologies». (Baym and Boyd 2012, 320)

Scalability is linked to a greater diffusion of content due to its costless mean of reproduction and greater interconnectedness among millions of users. Contents in a networked world are constantly disclosed and shared with the nodes of a network that connects with other networks at a pace never experienced before. In this environment people are not always in control and thus are not always aware to whom their contents are disclosed. Against this backdrop, IM services socio-technical practices hold centrality in empowering users with more or less control over the information they disclose. We have previously discussed how technologies embody their own norms, and how these norms constrain or afford people behaviors.

Another factor affecting people's behavior comes with technological embeddedness of social networks. Social media are indeed apt to embed social network having different ties strength. The strength of ties has been proven to enact different flow of information. Mark Granovetter (1973) in his seminal research defined the strength of interpersonal ties as «a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie» (Granovetter 1973, 1361). With his argument, he suggests that the strength

of weak ties is more prone to information diffusion by bridging different social group that otherwise (in the case of strong ties) would not "traverse greater social distance" (Granovetter 1973, 1366). According to Granovetter weak ties promote greater information flow across different social networks than that supported by strong ties, which are found to retain information within a specific network. Many scholars have shown how the self-disclosure of personal information is a process that involves and is influenced by two intertwined dynamics: the first oriented towards the gain of social capital (Lin 2001), the second towards the relevance of social influence (Rashotte 2007).

Paola Tubaro *et al.* (2014) argue that the self-disclosure of personal information involves a process where «Selection determines to whom a given content is revealed, while influence determines what content is shown to a given person, in a dynamic process with feedback» (Tubaro *et al.* 2014, 20).

Having control of all the aspects that a user undergoes when it comes to these two dynamics is something untenable to be managed rationally. In this sense, we agreed on Boyd's argument that [teens] «rather than trying to limit access to content, they work to limit access to meaning» (boyd 2012, 349). When looking at the socio-technical practice of WhatsApp, we should mind about the strength of ties in order to evaluate potential shortcomings for what concerns the contextual integrity of user information. In this regard, we have found the address book upload executed by WhatsApp when a user starts to use its service not respectful of the varieties of ties that a user's network (address book) embed. An aspect particularly evident when it comes to the status, name and picture features WhatsApp obliges user to fill out (only picture can be left unfilled).

The IM app foresees three options concerning the disclosure of profile image and name: nobody, contacts only, and all. The selection of the first option entails that nobody can visualize user name and profile picture. The second option displays name and picture only to contacts present in the user's address book, while the third option renders user-name and profile picture available to whoever has the user's number saved in the address book. The three options are grounded on a reciprocity criterion which allows to see pictures and names only to whom shares the same setting. The same holds true for the last seen status and the double tick feature. Notwithstanding WhatsApp is to be considered a IM app not requiring users to build their own profile, as it happens in the case of a more egocentric social network like Facebook, its recent update has given users more flexibility to display some identity traits. What is odd with this socio-technical practice is connected to the fact that information such as the profile picture and status are indistinctively disclosed to the network embedded in the user's address book. Such a default practice (upload of the users's address book) does not take into account the different strength of ties presents in a user network. For instance, the availability of those information for the employee can break the contextual integrity in terms of appropriateness. What is appropriate to share with friends may not fit the social sphere related to work. The same holds true for the social sphere concerning the family. The embeddedness of different social networks exposes the user's self-disclosure to "invisible audiences" (Vitak 2012). As noted by boyd (2008) even if the technical features of social media blur temporal, spatial, and social boundaries that enable individuals to keep various audiences separate, thus leading to what Jessica Vitak (2012) has defined "context collapse", we found WhatsApp's socio-technical practice concerning the upload of users' address book awkward because not necessary for its functioning. Such a consideration makes sense if we consider that WhatsApp is a synchronous IM services mostly based on a one-to-one means of communication.[16]

Conclusion

In this study, we have outlined the role technological normativity plays in putting people's agency in a spectrum of possibility. Such assumption has proven to be relevant to people when ascribing meaning to data. A relational dynamic that we found to be influenced by both the syntactical structure of technology and by the norms of information flow peculiar to a context. We relied on Nissenbaum's Contextual Integrity Theory to test whether the *constraining affordances* of the so-

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[16]WhatsApp allows users to participate in group chat. More recently has introduced a new feature that permit user to selectively broadcast towards address book contacts.

called bit-based contents (data) coupled with WhatsApp's socio-technical practices *inhibit* or *enforce* the contextual integrity of information.

Persistence of data on WhatsApp's servers for a 30-day life-span resulted an odd practice for the very purpose of a synchronous communication service. The recipient's ability to understand information is influenced both by the spatiality and the temporality of the *semanticization*. Thus, WhatsApp's socio-technical practice meddles into the sender-recipient relationship constraining people's ability to retain information bound to a specific context. An exception can be found in the use of IM services within a stable context (e.g. workplace).

Replicability of data has been troubling for contextual integrity by allowing users to duplicate, download and share contextual information in different social spheres, regulated by specific norms of flow. Such aspect is deemed problematic as it seems to constrain the creation of a trustworthy environment for communication. We have seen how other IM service such as Telegram, afford users with visibility of who is making a duplicate of a certain content.

For what concerns *Scalabilty* of contents, the socio-technical practice foreseeing the upload of the whole address book does not cope with the requirements of contextual integrity. Such a practice does not respect the strength of ties present in a user's address book. The disclosure of identity traits such as profile picture, status and name, may not provide the contextual integrity if indistinctly disclosed.

We have seen how the socio-technical practices under scrutiny were not necessary for the IM app to function. At the same time, a possible solution to these contextual integrity shortcomings have been observed by benchmarking WhatsApp practices against those of others IM service (Telegram and Snapchat). We have found the interplay between two or more affordances being an effective mean to mitigate the possible threats certain socio-technical practices may bring to contextual integrity. In this regard, it is important to observe how the activation of a latent affordance might be triggered through the introduction of a new socio-technical practice. For instance, we have seen how ephemerality of data in snapchat can hinder a range of threats to contextual integrity caused by their persistence, as well as the visibility of the screenshotted image in Telegram may help to build a trustworthy communicative environment, contrasting the unrestricted replicability of data. In these unstable and fast-changing environments individuals should be empowered with lightweight features enabling a selective disclosure of contents. Indeed, because a strong control over information is no more possible people should be further provided with effective features that contribute to foster trust among peers. Studying how the affordances of data in their interplay with the socio-technical practices of a social media impact the contextual integrity of users' information helped us understand their importance in mediating people's interactions. Even if the approach proposed in this study deserves deeper investigations we found it very well-suited because it escapes a deterministic view of technology yet not underestimating its impact on individuals' interactions.

Acknowledgements

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