

Privacy concerns and electronic data collection: group and individual response to social change in communications

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Abstract

New opportunities of social and economic relationships offered by evolving information and communication technologies have become in the '90 the subject of research projects and studies carried on with the support of international and national agencies. In particular, the diffusion of multimedia and pervasive equipments in daily life, has also questioned issues related with the conception and perception of trust, security and privacy that individuals and groups develop while using pervasive- or also defined ubiquitous - technologies. On one side, such technologies, if compared to the more established ones, can strengthen social control and nurture processes of social differentiation. On the other side, the use of pervasive technologies could improve and modify patterns of behaviour that coordinate communications and interactions among colleagues or collaborators. The problems linked with the treatment of personal data and in particular ethical issues have also increased with the developments of data collection concerning multiple dimensions of personal interactions. The papers debates these aspects and their privacy implications with empirical examples from studies concerning networks of communication among peers inside different types of organizations (education, research institutes, enterprises).

Keywords: privacy, interactive data collection methods, NSI.

1. Networks in Personal Communication

Network studies share a specific interest for personal communications and the attention for the study of how pieces of information move inside and between social groups dates back to the origins of the discipline. Social networks provide also a representation of social grouping and their study constitutes a relevant area of exploration about the structure and the flow of human communication. Among the more interesting one are those associated with the study of social relations and information networks inside groups of equivalent and non-equivalent members (in terms of social attributes such as age, status, gender, organizational position) and those interested in the characteristic and impact of information flow through networks (in terms of influence on personal interactions, types of group formation, efficiency and effectiveness of communication). Recent and established researches have advantaged a lot the studies of communication, giving detailed explanations of the impact of traditional and innovative technologies (Wellman,1999). Investigations of the impact of new communication technologies on social networks are developing with success (Leonard and Haines, 2007), and the influence of social network analysis (SNA) has been recognized because of its power in explaining the mechanisms of

transformations underlying specific social processes. Individual preferences based on principles of social selection in networks, in fact, can be put in evidence through adequate techniques (McCarthy, 2002) and their impact (social influence) can be explored also in complex processes of interaction (Steglich, Snijder and Pearson, 2004).

This is also the case of digital and interactive communication where the new forms of 'connected presence' are modifying personal networks and in general the types of ties and relations that individuals establish. Usually the empirical study of the impact of 'new' technologies is associated to the impact of an intervening event or factor on a priori situation of deficiency; but in the case of ITC the setting is different as these devices collide with daily life increasing the pace and the opportunities of individual interaction. So, the introduction of pervasive technologies in the living environment offers the chance to monitor social processes of change and differentiation processes inside social groups, as well as to see the reproduction of traditional forms of discrimination. Moreover, the possibility of monitoring network data concerning personal communications other than for security reasons, also, can arise ethical problems for researchers (Borgatti and Molina, 2005).

Several studies in the more recent period used information and data concerning the adoption of pervasive technologies to analyse the features of communication and to report the changes that are emerging as a consequence of the new technologies. Licoppen and Smoreda study on sociability and ITC (2005), for example, showed that new technologies are modifying the concept of relational proximity and practices of personal interaction from encounters to established relationships (family, friends), and that a specific 'strategy' underlies individual's choice between types of communication resource. The study of peer to peer communities (Strahilevitz, 2003) report the emergence of rules of conduct and new forms of reciprocity and commonality among experienced users. Research on virtual networks, (Petroczi et al., 2007) showed that relationships developed on the Internet have similar indicators of intensity, confidence, share of interests and multiplexity than off-line relations; eventually, they provide different forms of relations that are resource specific, such as mutual help (advice through forums) and identity safeguard or preference disclosure (virtual anonymity).

On the bases of such advances in the study of networks of communication, the paper focus on a relevant property of personal interactions: privacy. Following paragraphs debate the problems related with three main aspects of privacy in network studies. First, there are the aspects concerning structuring of the questions and confidentiality of responses in network survey interviewing (NSI). The second part addresses the use of network data (and in particular social networking websites) as indirect sources for acquiring information about social relationships at work and personal preferences. Finally, the paper discuss the relational nature of privacy relying on empirical data from a network survey designed to investigate the sense of privacy in personal communication.

1.2 Privacy as a Relational Aspect

The conception of privacy from a social and psychological point of view has been considered in the work of several scientists (Margulis, 2003). Privacy is conceived as a dynamic aspect of the individual condition which has two main components: an internal personality based aspect which is strongly correlated with auto-evaluation of

the subject and a social aspect which is correlated with participation and communication to different social spheres. Privacy is also a property of social contexts and organizations; as such it can change with the introduction of technology inside daily life and from the initial definition of privacy as ‘the right to be left alone’ there has been a change in perspective. Specifically, privacy in contemporary society has been considered equivalent to the right of the individual to retain individual data and to control personal information disclosure (Marx, 2007). On the basis of such definitions the operative definition of privacy has been attempted in social and psychological research in the form of multi-dimensional indicators and variables referring to the individual perception of sensitivity and confidentiality of information (Turrow and Hennesy, 2007).

The issue of privacy in network studies, has been debated more directly and extensively in the literature (Kadushin, 2005) about ethical concerns in empirical social network research. Attention has been paid to the nature of information (secrecy, rumors and gossip) as a prominent factor for the structuring of information flow (conspiracy networks) and its degradation process (Di Fonzo and Bordia, 2006). Most of the analysis concentrated on the factors of influence on the information dissemination dynamics and elements such as the structure of the network (number of super-connected nodes, of weak and strong ties etc.), the technological constrains that contrast the diffusion of a piece of information and the cultural variables that facilitate the spread of it. Empirical studies concentrated more on the analysis of group with special characteristics of confidence and secrecy, than on normal communications. Several studies, for example, analyzed drug diffusion and alcohol (Steglich and al., 2004) and imitative discrimination attitudes among adolescents (Kirke, 2006), or as in Kadushin and Alba’s work on intellectual elites (1976) and in Baker and Faulkner’s analysis of conspirators networks (1993), on the elements of secrecy (or disclosure of information) and confidentiality of the information flow.

Privacy concerns from the operational point of view, on the contrary, have been less debated and the selection of specific indexes to measure the individual and social dimensions of privacy in personal communications is still progressing.¹ Recently, some attempts have been done to define privacy also from a relational point of view using concepts and structural properties from social network analysis (Strahilevitz, 2005). Observations on how barring of information spread is established and reproduced among interconnected groups (from girls’ gossip to professional affiliation groups) give hints about the relational nature of privacy of communication and its structural properties. First, network studies put in evidence that a piece of information moves (or gets blocked) more efficiently inside a scale free network (or empirical one) than in a random one (whose structure lacks of social relevance) because some kind of information are more likely to be shared among members of a social network than others (a phenomenon that can be interpreted as group privacy). Second, in a scale free network, characterized by a specific structure of connectedness among nodes (some more connected than others), there is also the possibility that a single piece of information filters though because a person (aka a node with bridging position) has valued it as relevant (in terms of private or public interest) to pass to as

¹ Scholars suggest, for example, to consider with care and to apply communication flow indexes (which are widely employed in studies on communication) to privacy data only under limited conditions. Intervening elements such as the type of information transmitted, the influence of culture on dissemination criteria, and finally the usual non-relevance of privacy information outside the group of reference, in fact, may create problems of interpretation and comparison among different populations (Margulis, 2003).

much other persons as possible. Information inside a network is thus disclosed according to social norms and properties that are partially acknowledged by the composition and structure of the network; however, these properties, are changing with the increasing use of new technologies of communication. Technology resources such as emails, SMS or messaging create new opportunities of dissemination, also for private issues (circulation of photos or personal preferences) and reduce the impact of degrees of separation between sender and receiver of a message (Strahilevitz, 2005).

2. Data Collection in Network Surveys: the Issue of Confidentiality.

The problem of validity and reliability of the information collect via survey is always relevant in the concern of scholars; methodologist, in particular, pay a specific attention to aspects such as the formulation of the requests and of the answers, as well as the mode of data collection (Saris and Gallhofer, 2007). For network data these issues are also problematical because relational data in order to be significant should also show a good level of accuracy; so, large network data collections consider with care the problem of confidentiality (Freeman et al. 1993) and develop field strategies and specific techniques to assure privacy of the interviewees. Furthermore, since network data refer mostly to relationships and details concerning people, the intrusiveness of network questions tend to be high if compared to standard questions adopted in quantitative surveys. Social desirability is a factor that can influence a lot the setting and the responses in a social network survey: the respondent can hide on purpose some contacts and over-expose others that values as more significant and pertinent for the survey goals (Iacobucci et al., 1999).

The collection of relational data among specific subsamples of population as the elderly, for the example, can be altered by the desire to comply the interviewer, to hide her/him significant relations than in daily life or adding more formalized relations than reality (and so showing less dependant on public assistance or the family). The request to cite name and personal characteristics of contacts can be interpreted by entrepreneurs as a way of capturing confidential information on the market position of the firm and its competitive strategy (Elfring et al., 2003). Employees can be tempted to provide non relevant information about co-workers and supervisors in order to protect their position and depict the work environment in accordance with the employer public representation. Finally, in some cultural milieu giving detailed information about personal contacts is socially inappropriate and can generate problems both for the interviewer and the respondents.

The impact of the questions on respondents is also extremely dependant on the interview context and on the data retrieval strategy (notes, paper and pencil interview, automated data collection or web survey). If we consider the standard interviewing setting (paper and pencil questionnaire with network module) to the semi-automated interview using CAPI that offers the possibility to collect information on the contacts' attributes in separate modules (which makes possible to recall the data on demand) the difference in terms of reliability of data can be significant (Kogovsek and Ferligoj, 2005). Finally, the more recent adoption of online questionnaire put in evidence new aspects related with sampling biases and confidentiality of responses. Self-selection of the interviewee is another risk that network surveys have (Rothenberg, 1995) especially if snowball sampling and other non standardized strategies for selecting subpopulations are employed. Individuals do not show the same propensity to share personal information or involve in narratives about 'the people I know', and more

relevant, have a different perception of what may constitute a private and personal detail. Web survey which are often considered as a less reliable source of data because of their limited representativeness, may overcome these problems and deal more easily with sensitive questions. According to Schonlau, van Soest and Kapteyn (2007) the real discriminating effect of web survey is not on demographic variable or digital divide issues but on privacy issues. Respondents to web survey are more attentive to private data handling, and are collaborative in providing information or contacts only if the aspects concerning protection of personal details (own or others') are clearly addressed and data collection strategies are consistent with that.

3. Digital and Organizational Intrusiveness

Recently OECD recommendation on digital economy underline the potential damage that can derive to the individual not only in terms of access or exclusion from an increasingly important sector of social and political life but in terms of identity misrepresentation. According to these guidelines policies that enhance the confidence in the creation and use of digital contents should implement systematic and comparable data collection, research and analysis that improve the enforcement of privacy and consumer protection. However, technical features of digital technologies such as cryptography and security protocols cannot guarantee against the indirect disclosure of personal data or against the 'intelligent combination of pieces of seemingly innocent or unrelated information' (He, Chun and Zheyu, 2006).

Specifically, researchers analyzing the release of personal information through websites for social networking have shown that share of common attributes (as the participation to specific associative activities or adhesion to public opinions) can be discovered more efficiently by matching official social relations from multiple relational sources (work, interests, family) than directly (from the owner of the webpage, or advertiser of services and requests). The experiments of He et al. (2006) on the structure of online communities and privacy inference put in evidence that the possibility to extract individual preferences and personal details is more feasible than expected. On the bases of our friends' (or colleagues) attributes, privacy can be over passed and personal details be inferred from our personal networks of social contacts. The accuracy of these inferences is closely related to the influence strength between contacts, and not to our explicit preference for secrecy vs openness of personal details. To protect from indirect disclosure of personal information, one can either hide her personal contacts (friends mentors and informants at work), or ask them not to advertise their personal details or attributes. Stutzman (2006) analysis of adolescents websites for social networking (Facebook, Friendster, MySpace, etc.) showed that identity sharing in a perceived 'closed' community, such as a social networking website, is higher than expected. The disclosure of personal details is also very different from the type of disclosure that is performed in real life: on one side comparability of digital identity and traditional real-life identity can be hard to assess, but on the other side adolescents (an increasing number of adult people) can be victims of digital offences or target of 'identity information harvesters' that exploit their virtual identities obtaining easy access to economically relevant data for consumers' profiling.

Among the aspects that analysis of digital networks evidence is the one of the retain of personal details from third parties, such as Internet providers or other types of enterprises that run digitalized services. Organizational practices and policies

concerning privacy and data retrieval or handling can in fact change a lot among firms and prove frail against external pressures (market competition), as well as managerial exploitation. Moreover, evaluating the efficacy of organizational collaborative instruments based on social networking principles may involve the monitoring of personal relationships concerning employees privacy and preferences in personal communication instruments (Borgatti and Molina, 2005).

The design of a research project on the implementation of an internal social networking site by a large private research institute offered the opportunity to address such issues. The study, solicited by the research foundation for knowing more about the current intra-organizational use of communication technologies, had the goal to foresee the impact of social networking instruments for improving multidisciplinary work teams. The exploratory survey, administered to a small sample of researchers², scrutinized the use of communication devices among workmates (type of technologies preferred, intensity of use, type of contacts) and evaluate the spin off effects in the use of advanced technologies of communication (Petroczi at al. 2007).

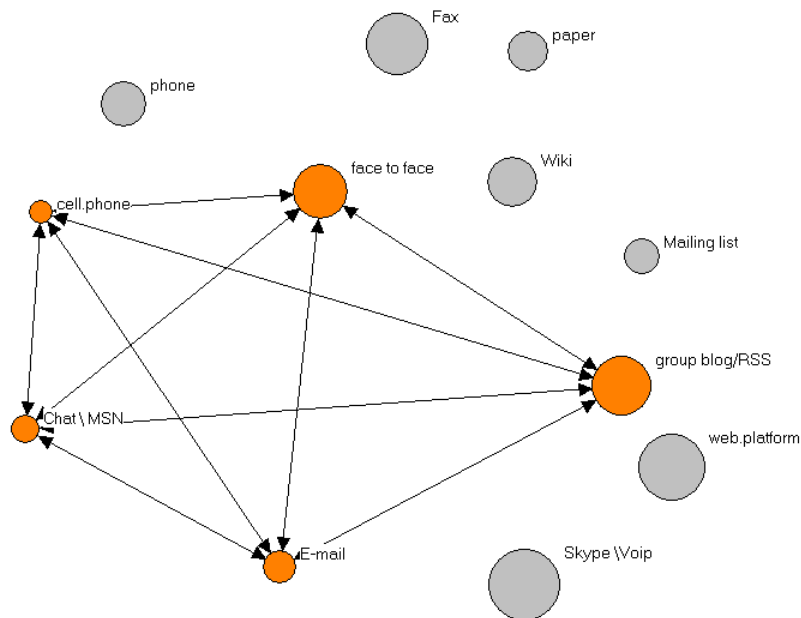


Diagram 1 – Network of communication devices of a researcher (Legend: colour of nodes = high intensity of use (orange; size of nodes= scale of similarity among instruments; connections among nodes= preferred instruments with collaborators).

The analysis of the patterns of personal communication among researchers showed that the intensity of use of advanced communication devices in work contexts is articulated differently than in leisure or daily life; specifically, pervasive technologies are frequently discarded in favour of less invasive instruments or adopted only in specific work projects. The structure of the communication networks of the

² The exploratory study was carried on a group of 26 researchers; almost all the subjects were male and inside the group age of 25-35 years. They were administered a short questionnaire with a network module and their virtual contacts were monitored in aggregate form while at work. The second phase of the research is currently in course.

researchers revealed that preferences in terms of communication devices are highly individualized and influenced by a traditional way of conceiving communication; oral and informal messages and contacts are privileged towards more innovative instruments of communication (wikis, P2P platforms). Intra-organizational relations showed the presence of dense and connected inside topic-specific work areas, but fragmented and scarce even with those other groups that have complementary competences (archival studies and information studies of categorization, for example). Diagram 1.1, for example, depict the communication preferences of a researchers: the complexity of the network of communication instruments is restricted to few instruments which are used diversely with non team and team collaborators; moreover, similarities among technologies are not fully exploited. The preferences are for personal or directed communication such as phone calls or e-mails while 'mediated' and diffused forms of communication are less preferred, except in a small group of users. Only researchers with less work experience (and a more fresh relation with advanced technologies) are keen to spin off the use of related technologies (from cellular phone to Voip calls) and advanced instruments of workgroup (RSS feeds, blogs).

The result of the preliminary study was that despite the high-tech orientation of the workplace, its internal organizational culture favours styles of communication which block the use of multiple communication channels. Contrary to initial expectations some of the problematic elements of IT technologies foreseen by literature (Leonard and Haines, 2007) and reported in selective empirical studies (such as lack of trust in the effectiveness of the instruments, reduced potential of formalization in relations, complexity of use and fear of external control), still influence individuals to structure their communication flow with work peers and collaborators according to traditional criteria. So, only a minority of researchers develop a more creative mix of communication instruments, because this will favour also a less individualized approach in defining rules of conduct and roles and the emergence of new organizational approaches. Despite their innovation potential, pervasive devices of communication are thus kept at a distance by most of the researchers, even when their adoption could benefit the interactions among peers and facilitate reciprocity of knowledge and exchange of competences inside the institute.

4. Social and Relational Aspects of Privacy in a Network Survey

Recent psychological contributes seem to converge on the idea that privacy is not a private matter but, on the contrary, it is mostly a public matter (Westin, 2003). So, the sense of trust and safety that persons develop towards institutions and the others express psychological traits, but are strongly correlated to cultural and situational factors. The development in our society of concepts and practices related to privacy and privacy protection, security and safeguard of individual rights is thus mostly politically and historically determined and is linked with the concept of a personal identity. This last aspect is particularly relevant for the young generations: other than being a group of users which are more experienced in the use of Information Technologies, young people are a social group of relevant scientific interest for analyzing the issue of locus of privacy responsibility, as adherence to social and moral norms (including other's right to privacy) is developed in this specific phase of personal identity formation (Bannert, 1996).

Typically, the impact of the new generations on the demand of technology is related to structural factors such as economic and social conditions of the population, but the use of information technology and more sophisticated aspects of mobile connectivity are indeed more and more mediated and diffused in Italian society by means of the young users, which can place preferences over the market.³ To implement previous debate on privacy and communication networks, this paragraph discuss the results from a survey concerning privacy perception and norms infringement among young users of pervasive technologies. The research was developed in winter 2007 as part of a larger multidisciplinary project on pervasive technologies (Discreet, 2006-2008);⁴ with the aim of testing preferences and demand of advanced technical measures for improving privacy in communications. To explore the larger impact of pervasive technologies on social definition of privacy part of the enquiry focused on adolescent's perception of privacy at the individual and societal level (including dimensions such as privacy perception, privacy protection and regulatory issues). So, part of the questionnaire submitted to the sample of students addressed directly and more in details the attitudes of the young towards regulatory aspects of technology use (Paine et al, 2007)., as well as the commercial and fraudulent use of personal information, and control of location of the individual (tracking devices).

Among young users and adolescents we can expect that these relations between privacy and technology are re-enforced also by group rules and fashions; but results show that when confronted with issues such as privacy protection and regulation, respondents divide in three groups. So, only one third of students reports to be worried about availability of personal data given out on the Internet to third parties, while the other two groups are not worried either because do not foresee any damage to themselves or trust technologies to be able to protect against deceitful use of personal information. A large majority of respondents are worried about the use of profiling or user identification software but there are also a significant proportion of respondents (26%) which are not troubled by monitoring or profiling software. So, despite the fact that personal data are perceived as major elements of individual privacy, they are also considered as elements that may be opportune to disclose (for example number of cellular phone, name of school attended) inside specific social contexts or groups (friends, acquaintances).⁵

³ Access and use of Information technology among the Italian population is still a recent phenomenon, if compared to other European countries. Official statistics (Istat, 2007) report recently that 47,8% of Italian households own a personal computer, and only 38,8% of them can access the Internet, while the number of households that use mobiles is on the contrary almost equivalent to the total population (85,8% of households). These figures, however, increase a lot if we concentrate on the younger segment of the population; if we consider households with at least one member having less than 45 years of age the rate of access to the Internet rises to 43% of the households (in the European Union (27) is 45% of households). Of course, the use of PC and Internet is dependant on the availability of technological devises in the family.

⁴ The empirical study involved three high schools (total sample 128 students) located in a similar territorial area of Italy (four urban areas of North Italy); The sample was composed by an equal proportion of both gender adolescents (49, 6% female) and showed a relative homogeneity in age of the respondents (38% nineteen and 47% eighteen years old).

⁵ Findings confirm the categories proposed by Westin to classify privacy orientations of adults; he named the three groups as 'privacy fundamentalists', 'privacy pragmatists' and 'the unconcerned' and distinguished them in terms of different locus of privacy responsibility, as more or less oriented towards individual rights and social control of personal data disclosure.

4.1 Communication Networks and Privacy Disclosure

Another relevant part of the study concerned the perception of private space and the correspondent type of behaviours which are considered admissible on the Internet and in real life; as an empirical evidence of these aspects the study evaluate the social networks that develop among classmates using personal devices of communication (smart phones, text messaging and other technological instruments). Specifically, the patterns of communication via text messaging among the young have been analyzed with reference to topics which may have a strong impact on the privacy and identity of sender/receiver (such as joining adult community online, faking identity and sending vulgar pictures).⁶ Since the structure of the networks of relations among classmates may change according to the type of topic, the analysis concentrated on individual attitudes toward social norms infringement and the overall composition of her communication network, looking at structural changes to evaluate the impact that pervasive technologies are having on the respondents' construction of privacy perception (Odella, 2008).

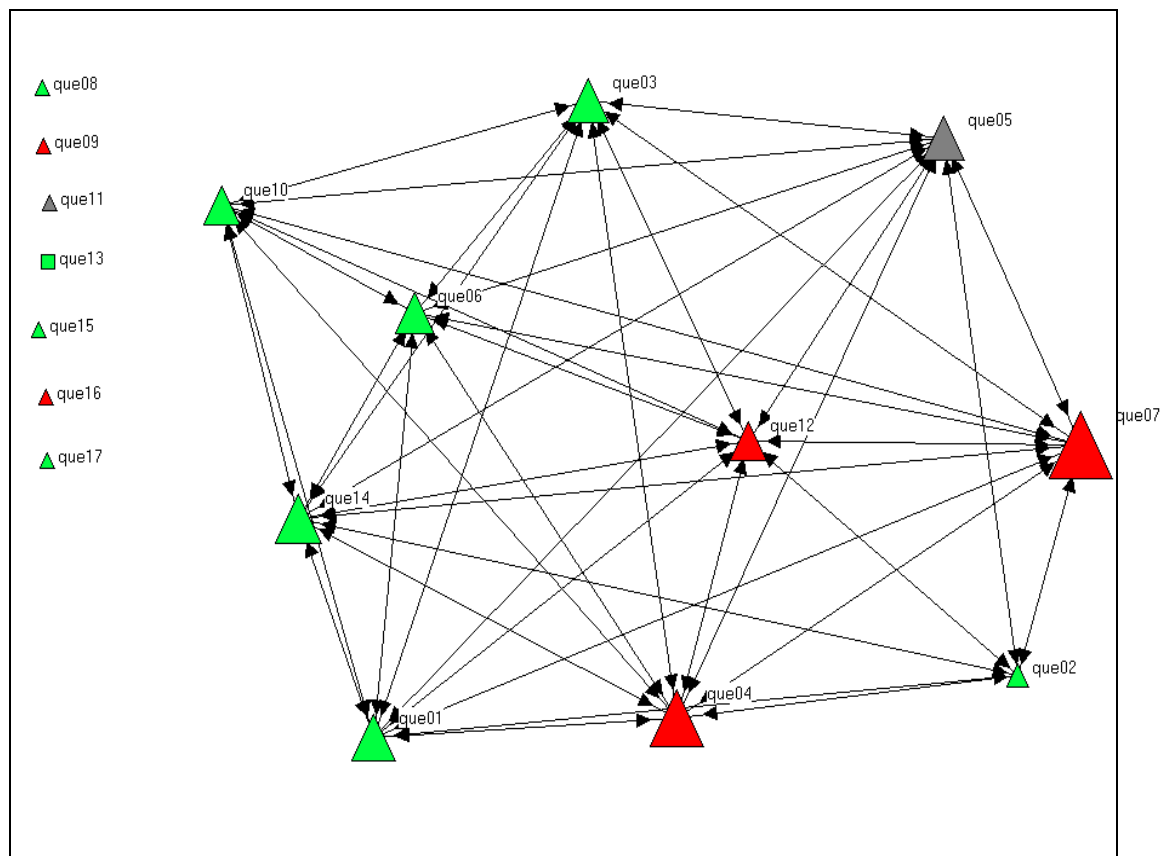


Diagram 1 – Network of communication (text messaging) among classmates - type of item= joining community online (Legend: shape of nodes= gender, triangle=girls; colour of nodes = green positive attitude towards faking identity online; size of nodes = intensity of communication with selected classmates in relation; connection among nodes= subjects messaging with intensity above 1).

⁶ This part of the questionnaire was administered paying a specific attention to privacy issues; the teachers and interviewer had no access to the full data and to prevent identifying the responder an anonymizing code was used for the multiple levels of identification (school, class, respondent, sensitive individual data).

Figure 2 provide an example of how the patterns of personal communication inside a class modify according to the type of attitude expressed by each respondent toward disclosure of personal privacy preferences. The orientation towards social norms was also considered looking at the individual responses for admissibility of participation to adult online community. Analysis of the networks confirm that the general attitude among the class was to accept such behaviour, but to restrict privacy disclosure (sending the invitation) only to a limited sub-group of classmates (with dimensions of sub-groups variable from 5 to 12 members out of 17 members of the class). As previous researches on adolescents and IT show (Horstmanhof, 2005), most of the social attitudes that are formed in dealing with technology and the type of effects that can be accessed by it, are still developed inside peer groups (which is also the primary source of information on technology applications) and this may pose problems of self-regulation of privacy concerns (individual restrain from infringements) and social control (Leonard and Hines, 2007). Literature reports stated, in particular, that privacy perception using pervasive technologies can be reduced and altered by the features of the communication medium or express in a more individualized form, which may develop be in contrast with social and institutional norms. This type of 'deviant behaviour' is particularly relevant when analyzing patterns of behaviour adopted in virtual interactions: analyzing interactions preferences influenced by computer-mediated communication some studies showed also that the attributes of anonymity and self-awareness (as well as emotional distance) of different type of pervasive technologies can modify the user's perception and her preferences in disclosure of privacy (Sharafi et al, 2006).

The analysis of the patterns of communication of all the classes involved in the study showed that the influence of new technologies is more complex and could empower discriminatory (or inclusive) practices among small groups as well as increase the pleasure/effectiveness associated to intimate communications (sharing privacy preferences and personal interests) among classmates. The composition of the group members in terms of normative orientation (pro or versus privacy protection), for example, seem to influence the preferences of the network members in terms of privacy disclosure (sending messages to) and the attitudes towards sensitive topics (pornography, violation of social norms but also more positive aspects such as public discussions of adolescents sexuality). Chain-effect relationships are in fact extensively documented in adolescents groups (Kirke, 2006) and may constitute an element of change in attitudes (value orientation), as well as an opportunity for manipulating and force individual behaviour (such as in bullying cases).

5. Discussion

The development in our society of concepts and practices related to privacy and privacy protection, security and safeguard of individual rights is politically and historically determined and is linked with the concept of a personal identity. But, as sociologists have largely showed the conception of a personal sphere where the individual is free to retain information, opinions and preferences and behave in accordance to his/her taste and judgement (or briefly of privacy) is a social product of contemporary society and institutions (Barrington, 1984). Specifically, privacy of the individual (and in particular of vulnerable groups) is still perceived to depend a lot on the social conditions and institutional provisions that determine the boundaries of

what is public or commodifiable and what is not (Riback and Turrow, 2003; Caprioli et al. 2006). Since the use of pervasive technologies is not regulated by established norms other than the internal group norms (and as such more permeable to individual preferences), violation of others' private space could easily occur and generate unanticipated effects (Bennet and Raab, 2006). Nevertheless, practices and routines established on the Internet organizations are having an enormous effect in terms of structuring and emergence of new forms of social relationship and personal communication as well as on new forms of economic and political activities (Lyon, 2002). This is the case also of scientific and non profit research that rely on 'free' sources of information, such as analysis of social networking and digital content relations. So taking for granted that the diffusion of new communication technologies is going to modify our society and our way of interacting how can we increase our level of awareness for issues such as privacy, freedom of the individual and social control? Scientific research community is actually working on the formalization of disciplinary ethical guidelines for the treatment of electronic personal data, but the role of authorities and IT industry is also essential for their effective implementation. On one side, IT researchers and communication technologies developers are asked to think more in the direction of in-built privacy enhancement devices (Kostakos and Little, 200) and other forms of instruments that give responsibility (and control) on the final user (such as the preferences in privacy disclosure). On the other side, the role that authorities have in fostering and preventing more democratic (or vice versa more authoritarian) and anti-discriminatory uses of communication technologies can make a difference in daily life of people enforcing their privacy rights in virtual interactions and protecting individuals against the risk of social identity 'harvesting'.

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