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Identity as an Emerging Field of Study

Areas of research and the cross-disciplinary challenge

Ruth Halperin

With the introduction of digital media, publicly available networks and the development of the Information Society, identity has become a pressing contemporary issue with wide ranging implications. This article outlines diverse areas of identity-related research and reviews the relevant literature on offer. Analysis of the research to date leads to the conclusion that cross-disciplinary approach is called for if we are to achieve a comprehensive understanding of Identity in the Information Society.

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Dr Ruth Halperin

Research Fellow, London School of Economics and Political Science. Research focus on the Social aspects of Identity in the Information Society
E-Mail: R.Halperin@lse.ac.uk

Introduction

This paper highlights the pervasiveness of identity-related issues, pointing to major developments that bring about the emergence of Identity as a new field of study. The relentless drive towards an Information Society has intensified, rather than created, a central problematic of the identity domain. Although there are undeniable benefits, this intensification highlights the pitfalls that attend this remorseless progress towards the digitised future. Emerging from this trend is a host of diverse areas of identity-related research, with implications right across the board, ranging from the individual through to the organisational, the national and international.

Having recognized the growing importance of identity as a research area, as well as delineating its potential scope, this paper moves on to ask what the research community has achieved so far and what is still left to do. The state-of-the-art in identity research is analysed using the TFI model which describes an information systems as being made of technical, formal and informal layers.

This analysis reveals that individual disciplines tend to focus only on one layer at a time of the TFI model, ignoring the contextual importance of the others. There is virtually no cross-disciplinary research in this area. It is argued that this leads only to a partial understanding and conceptualisation of the identity domain and that lack of a common vocabulary is a major barrier to a more comprehensive research in this important field of study.

1 Identity in the Information Society – an emerging field of research

Identity is an emerging field in academic research and consolidation of the discussion on what constitutes identity is just beginning. A major step towards the study of contemporary issues associated with identity is being taken by the European Union backed FIDIS project (Future of Identity in Information Society), a part of which is concerned with the ontological constitution of the identity domain. This work (NaHi05) points out that, far from being an academic construct relevant only to a small number of researchers, identity in all its aspects impacts tangibly on everyone's lives.

The FIDIS project underlines that there are many different ways of conceiving identity and sets forth a number of examples. First, a distinction is drawn between the identity dimension, which is the set of characteristics or attributes which represent a person, and the identification dimension, which relates to the disclosure of this identity information. A person's identity has many different facets, each of which will be more or less relevant for particular forms of identification. There is the internal aspect of a person's identity which is entirely his own and on which information technology cannot operate. Then there are the characteristics or representations of identity which can be objectively known or observed. Various of these can be used to make up different types of identity for different purposes: legal, social, employment, citizenship, sexual, ethnic, religious etc. Identities may also be attributed, for example as a marketing exercise based on profiling activities.

Moves towards an Information Society have, in most cases, intensified rather than created the central problematic of control over access to identity information. Governments, commercial organisations, criminals and others are responsible for increasing assaults on the boundaries of a person's identity. Information technology has revolutionised the collection, processing and use of identity information since more data can be collected and stored, then processed into usable information. As more information becomes available, more uses have been found for it, to the extent that collection, storage and processing activities now require heavy, if often ineffective, regulation. Profiles are built from previously unlinkable identity information; law enforcement

has unlimited access to formerly forbidden information, such as passenger databases; surveillance and profiling are consolidated into a process of social sorting such that, once a person is categorised as suspicious, the normal burden of proof is reversed. The very fabric of society, social relationships and the trust which underpins them, is being reshaped by the ubiquity of technological mediation.

The importance of these issues warrants research into the topic of identity and its emerging forms, particularly in the context of the Information Society.

2 Identity in the Information Society – Areas of Research

The Information Society requires technologies that address trust and security yet also preserve the privacy of individuals. As the Information Society develops, the increasingly digital representation of personal characteristics changes our ways of identifying individuals, and supplementary digital identities, so-called virtual identities, embodying concepts such as pseudonymity and anonymity, are being created for security, profit, convenience or even for fun. These new identities are feeding back into the world of social and business affairs, offering a mix of plural identities and challenging traditional notions of identity. At the same time, nation states manage identities in very different ways. For example, in Germany holding an ID card is mandatory from the age of 16, while in the UK state-issued identity cards do not exist and it is not yet clear whether they would be accepted by the population. Identity as a contemporary phenomenon and a research domain, therefore, pertains to multiple areas of modern life, having implications at many different levels.

In the following, some key areas of identity related research are sketched out. From this outline it becomes clear that a comprehensive research agenda for the identity domain requires fundamental research into the concept of identity as much as applied research into various practical contexts and application areas. Furthermore, an inclusive research agenda for the identity domain necessitates participation by a broad community of researches since identity-related issues are, to a large extent, multidisciplinary in nature.

The concept of identity and its uses in the context of the Information Society arise as a primary area of research. The notion of identity is by no means unproblematic; working towards shared understandings of key concepts in this field and developing conceptual frameworks for studies of identity are tasks worth pursuing. The semantics of identity in the Information Society, the different concepts, functions and operations associated with identity in the Information Society (e.g. identification, privacy, roles and behaviors, reputation, mobility, personalisation, authentication, credentials and proof) warrants ground breaking research. Equally well, the concepts of physical, digital, virtual, partial and cyber identity calls for in-depth analysis; how they are used, how they might be used and abused, the nature of the impact that they will have on shaping the e-Society as well as its supporting technologies, and how they ought to be defined in order to respect the fundamental rights of the citizen.

Identity Management is another key area of research for the identity domain. Considerable research is required on the multiplicity of identities and Identity Management Systems as they are used in different cultures as well as in different areas of life and work. For example, the management of identity by the citizen, particularly through Identity Management Systems which will both allow identity to be used as a means of navigation in the Information Society, and open and facilitate access to online services. Interoperability of Identity Management Systems is an issue of great importance, which refers to the ability to use identity information from one system in another. How interoperability may expand or limit the benefits to citizens, businesses or governments stands out as key question for research.

Identity in the context of supporting and emerging technologies represents a major area of research. More specifically, it concerns studying the requirements, definitions, conceptions and implications of specific security, trust and privacy technologies such as Privacy Enhancing Technologies, Biometrics and Cryptography.

A further area of research concerns Identity in relation to risk and regulation. The critical challenges that Cybercrime may pose for the Information Society, including the management of acceptable levels of risk in the context of identity (theft, abuse, misuse) are territories calling for research. This relates to notions of legal entities and the regulatory framework as well as supporting technology that will be required as a consequence. Further issues include liability and responsibility in the virtual world, and the role that identity could play in defining responsibility in technological, economic, legal and societal facets of the e-Society.

Because identity in the Information Society is an emerging phenomenon and academic research in this field is just beginning, the scope of any research agenda should be broadly defined to allow inclusion, not exclusion, of relevant themes and related debates. When considering units of analysis pertinent to the study of identity one recognises the need to further broadening the research scope. For example, identity of persons in different roles (e.g. citizen; costumer; individual) in different places (home; work; mobile) and in different modes (offline; online; mixed modes) are equally relevant. Likewise, explorations of identity in different contexts are significant, as they range from the individual through to the organisational, the national, international and the global.

Clearly, identity in the Information Society is an increasingly important topic and recent world events have served to intensify that importance. It seems timely, then, to consider how the research community is approaching these issues and to take an overall view of what is being done and what is still left to do.

3 The State of the Art of Identity Research

In order to analyse the current literature in the identity field, it is helpful to have a conceptual framework as an aid to classification. The analysis which follows employs the TFI model [LiBa90; Ba96] according to which information systems may be conceptualised and described as comprising technical (T), formal (F) and informal (I) layers. The power of the TFI model lies in its holistic approach to the study of information systems and related themes, so that the layer to which particular research pertains can easily be understood and its place within the field as a whole ascertained. The model can also be used to detect lacunæ in the literature and provide direction for future research and practice.

The technical, formal and informal layers of the TFI model when applied to information systems are defined as follows. The technical layer refers to the information technology component and its spheres of convergence, that is, hardware, software,

data formats, protocols and so forth. The design of the technology such as the layout and appearance of the system are also facets of the technical layer. The formal layer of the information system refers to shared understanding of attributes and their formal structure. Policies, regulations and standards are typical manifestations of the formal. Finally, the informal layer refers to the ability to operate with attributes and context across domains. The informal layer of a system encompasses use or behaviour as well as systems of beliefs embodied in perceptions, expectations and culture.

The relationships between the abstracted layers of the TFI model are mutually constitutive and interdependent, suggesting that technical requires formal and formal requires informal. Stamper et al. [St00] succinctly illustrate this interrelation of abstracted layers, explaining that:

> „*informal* norms are fundamental, because *formal* norms can only operate by virtue of the informal norms needed to interpret them, while technical norms can play no role…unless embedded within a system of formal norms." [St00: 19].

Metaphorically, this can be viewed as a 'Russian doll' effect, where the informal is the outer shell containing the formal which, in turn, contains the technical. From the inside, the technical cannot be examined without first considering (unwrapping) the outer layers in turn [Ba05: 16].

3.1 Research Method

A review of the literature was undertaken in order to assess the state of the art in identity research. Initial searches were carried out using major databases chosen to give coverage of relevant major fields, including technical sciences, social sciences and law. These searches revealed a vast literature covering the identity domain in general. Restricting the search to work more closely linked with information technology issues allowed us to compile over 400 articles published over the last decade. For the purpose of the current analysis a total of 70 articles were randomly sampled and reviewed. The first stage of analysis explored the different perspectives from which the topic of identity is currently being addressed. At this stage an exploratory, grounded approach to mapping out the literature was employed and no framework was set out in advance other than general knowledge of conventional disciplinary

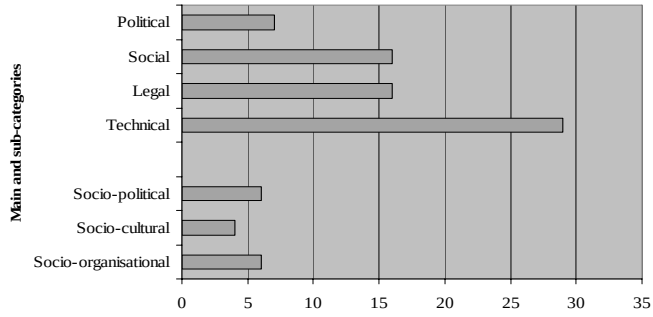

Figure 1. Distribution of perspectives

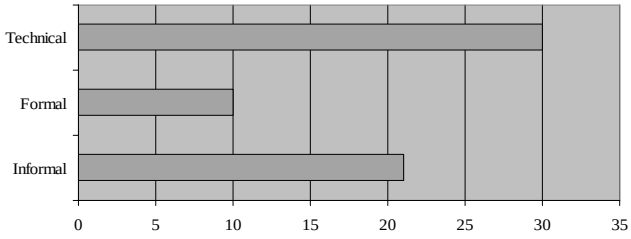

Figure 2. Distribution of articles over the TFI categories

domains. This done, the second stage in the analysis was to measure each sampled article against the TFI model to establish which layers were considered in each case.

3.2 The Disciplinary Dimension

The first stage of analysis yielded several categories representing the range of perspectives in the study of identity. The categories were political, social, legal and technological, with sub-categories in the social domain, characterised as socio-political, socio-cultural and socio-organisational.

Figure 1 demonstrates that the weight of research in this sample is dedicated to the technical disciplines, followed by the social science and legal disciplines, with the political perspective being the least popular. The sub-divisions of the social science papers are roughly equally split between the socio-political, -cultural and -organisational.

The political perspective encompassed articles dealing with identity in the national or international context, with focus typically placed on power relations among nation states. For example, Lehning [Le01] examined questions of political identity and citizenship, raised by the creation of the 'new Europe'. Williams [Wi98], through his conception of 'liberal sensibility', discusses a foundation for integrating identity concerns into reformulated understandings of security as applied to theories of International Relations. Articles adopting a political perspective, whilst dealing with identity, in particular security, rarely make explicit reference to information technology. Nevertheless, insight may be gained from this body of work, particularly when considering the potential significance of 'national identity', the unit of analysis typically used in this context.

The next category was broadly defined as the social perspective. Given the scope of this perspective, a set of sub-categories was further identified so as to allow a more nuanced analysis. Among these was a socio-political perspective. Whereas the political perspective described above focuses at the national level, the socio-political perspective considers other social groups and issues related to the power relations between different groups. This body of work is quite diverse, encompassing a wide range of social groups such as women [HoRo04], medical patients [Al03] and consumers [Ho99]. Issues placed centre stage include, for example, the implication of anonymity and privacy in the context of health information.

The socio-cultural perspective is the second sub-category within the social domain of identity research. It is differentiate from the socio-political perspective because focus is not placed on power relations among social groups but rather on the creation and meaning of self and social identities in a broad cultural sense. For example, Phillips (Ph98) examined public discourse in order to illuminate the processes by which issues of anonymity, surveillance, security, and privacy are integrated into public understandings of, and interactions with, consumer payment systems. Prominent themes emerging from this body of work include the public discourse on anonymity [Ph98], online identities [Ha02] and consumer privacy [Ta96].

The final sub-category of the social domain of identity research is the socio-organisational perspective. Papers in this sub-category typically discuss identity issues within organisational and managerial contexts. Organisational identity [FoWh02] is explored in its relation to self and 'other' identities. Professional identity [LaDa05] and the ways in which identification processes are used as control mechanisms [KaAl04] are analysed. Issues concerned with the Information Society are not yet a central feature of this literature which, nevertheless, provides a useful conceptualisation of identity and, in particular, a lens through which to observe its behavioural and perceptual dimensions. Such informal aspects of identity and information systems are vital and these socio-organisational studies provide a foundation for future research on identity and its relation to the e-Society.

The legal perspective on the study of identity emerged as a key category in the analysis of the literature. A broad range of issues are addressed from the legal angle; foremost of these are identity theft [Te00; Ca04], identification and profiling. Legal discussions on identity cover regulatory issues as well as the philosophical and ethical concerns, together with their consequences (see, for example, [Ro97]).

Finally, the technological perspective on identity research clearly emerged as the dominant perspective, with security and privacy concerns being brought to the forefront of the analysis. Whilst the label 'technological' seems to capture the core of this literature, a diversity of topics and themes is nevertheless apparent. Revocation of identity [BrSt01], location privacy [HiYo01] and identification systems [Ba05] are but a few examples.

3.3 The TFI layers

Having established the different perspectives on the study of identity, the second stage in the analysis of the literature is framed by the TFI model introduced above. Here, the analysis focused on the extent to which each of the 70 sampled articles relates to the technical, the formal or the informal layers. It was possible to classify the vast majority of the articles in this way and Figure 2 represents the distribution of articles for each layer. The technical layer is clearly dominant, and a reasonable amount of research activity is devoted to the informal layer. The least popular area of research relates to the formal components of the identity field. Very few articles relate to more than one layer in the TFI model (n=4) even though the model itself is representa-

tive of a complete (information) system. Studies overwhelmingly focus on one layer to the exclusion of the others.

When interrogating the data, it was found that the perspectives identified in the first stage of the analysis map accurately to the TFI layers identified in the second stage. Articles classified within the technological perspective map straightforwardly to the technical layer of the TFI model. Coming from the engineering and computer science disciplines, this body of work is characterised by the exclusive attention given to the technical component of the information system and by viewing identity issues through a purely technological lens. The formal and informal contexts of technology are almost never addressed. The formal layer corresponds with the legal perspective and, to a certain extent, with the political perspective as well. Research into public and government policy, legal standards and regulation represents preoccupation with the formal manifestations of identity. Finally, the informal layer of the TFI model maps to the social perspectives of identity research. Within all sub-categories of the social domain (the socio-political, -cultural and -organisational) perceptual and behavioural facets of identity are brought to the fore, thus highlighting the informal layer of the systems studied. Reference to the underlying technologies and their formal settings are often assumed, but rarely made explicit.

4 Conclusion

The discipline-bound nature of the research on identity, emerging as is does from this analysis, points to prevailing boundaries and, arguably, to the limitations of the literature in its current state. This tendency to study identity from a single, dominant point of view may lead to obvious advantages in terms of disciplinary depth and rigour. However, major shortcomings are evident as only a partial understanding of identity, both as a concept and as a phenomenon, is ultimately offered. The analysis reported herein reveals that individual disciplines tend to focus only on one layer at a time of the TFI model, ignoring the contextual importance of the others. There is virtually no cross-disciplinary research in this area. A lack of a common vocabulary seems to be a major barrier to a more rounded understanding of the identity domain.

Academic study in this area is both timely and necessary but, in order that knowledge may be shared within the community of interest, it is necessary to establish a common language. The FIDIS project is pioneering attempts at a solution to this problem [NaHi05]. In endeavouring to clarify the identity concept across disciplinary boundaries and to build a database of terms and usage drawn from all disciplines researching in the identity area, Nabeth et al argue that they do not seek to establish a definitive ontology, but rather to provide a dynamic and evolving tool to assist researchers [NaHil05]. Indeed, a holistic, cross-disciplinary approach is called for if we are to achieve a comprehensive understanding of identity in the Information Society. As questions of identity rise swiftly up the political agenda, researchers must urgently redouble their efforts in order to answer the more difficult questions about how different perspectives on this important problem may be reconciled so that a balanced and holistic approach to the pressing contemporary issues of identity may emerge.

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