City, University of London Institutional Repository

"Essentially made of information": concepts and implications of informational privacy

David Bawden and Lyn Robinson
Department of Library and Information Science
City, University of London
United Kingdom

Abstract
Introduction.
This paper presents an approach to a conceptual understanding of privacy issues, rooted in Luciano Floridi's philosophy of information and information ethics. It draws from Floridi's ideas of ontological information privacy, in combination with other frameworks.
Methods
Qualitative conceptual analysis of a set of material found by a comprehensive search for articles and books discussing Floridi's informational privacy, and a selective search for related relevant materials; sources used were Web of Science, Library and Information Science and Technology Abstracts, and Google Scholar. A detailed evaluation of Floridi's ideas of informational privacy within his philosophy of information, and a comparison with other informational privacy models, leads to an analysis of their applicability to research and practice in the library and information sciences.
Results
There are five major considerations: each person is constituted by their information, so that informational privacy is fundamental, overlaying other privacy type; breach of informational privacy is an aggression against personal identity and self-development, and hence protection of privacy should be based directly on the protection of human dignity; explicit protection for group privacy is as important as for individual privacy; digital technologies can both defend and damage privacy, and can also change our understanding of it; information friction, anonymity, and obscurity are key concepts.
Conclusions
Floridi's conception of privacy, within his philosophy of information, offers, in our view, the best basis for developing information privacy as a field of research, study, and practice within the library/information disciplines and professions. Suggestions for future research include: formulation of LIS privacy issues in terms of Floridi's conception, to assess its value; introduction of information privacy concepts into models of information behaviour and information literacy; investigation of quantitative and semi-quantitative privacy modelling, based on a formal analysis of informational frictions.

Introduction

> '*Each of us ... is a fragile and very pliable entity, whose life is essentially made of information ... only within a philosophy of information that sees human nature as constituted by informational patterns do breaches of privacy have an ontological impact*' (Luciano Floridi, 2016, pp.310-311).

> '*We [...] have a private life [and] hold it infinitely the dearest of our possessions*' (Virgina Woolf, 2002, 58)

> '*Any society in which no informational privacy is possible is one in which no personal identity can be maintained*' (Luciano Floridi, 2006, p.111).

The protection of privacy, which the information philosopher Luciano Floridi has denoted as 'one of the defining issues of hyperhistorical time' (Floridi 2014, 102) is an increasingly important part of the remit of the library/information disciplines. The quest for ways to preserve privacy, while not impeding open and efficient access to, and use of, information and data is a major challenge for legislators, regulators and the digital economy and society which is increasingly urgent and important.

One response has been for library/information institutions and organisations in a variety of contexts to design privacy policies appropriate to their situation. Some typical examples are:
- the International Federation of Library Associations statement on privacy in the library environment (IFLA 2015)
- privacy guidelines from the American Library Association for a variety of specific contexts, such as e-book lending, library websites, and library management systems (ALA 206)
- a UK guide to privacy for public library staff (Charillon 2018)
- a statement on patron privacy with respect to digital resource access from a US academic library (Calter 2019)
- a suggested model for how information professionals in general, and public librarians in particular, may guard their patrons' privacy, devised by the Chief Executive of CILIP, the UK library and information professional association (Poole 2017)
- the privacy policy statement for the Chemical Abstracts Service (CAS 2019)
- the privacy policy for the Google search engine (Google 2019).

However, privacy is a complex and contested concept, whose very nature changes as information and communication technologies become more pervasive and omnipresent. A clear understanding of the issues in general conceptual terms, as well as in the detail of the local context, is a prerequisite for effective action. While some of the current privacy policies are rooted in wider principles - the IFLA privacy statement, for example, being based in the IFLA Code of Ethics, and in the Universal Declaration of Human Rights, of which article 12 mentions privacy - they are generally pragmatic, and responsive to perceived local pressures and problems.

Although there has been research and analysis within the library/information discipline on issues of privacy, it would benefit the discipline and profession to have a clear and rigorous framework for privacy issues, with which to unite the various opinions and perspectives into something which can be readily understood, communicated and carried forward into practice. Buschman (2016) argues for a broader theoretical understanding of privacy as a support to action by the library/information professions; if not exactly a lone voice, he is certainly one of few. Wu, Vitak and Zimmer (2019) advocate a research programme for information privacy, based on the privacy conceptualization of Westin (1967).

For an early example of the application of various privacy theories and frameworks to policy development, in the specific case of the ethics of big data, see Mittelstadt and Floridi (2016A); see also Rønn and Søe (2019), who apply the privacy model of Tavani to issues of social media privacy, and McMeneny (2017), who uses Nissenbaum's privacy framework as a guide for privacy policies in libraries.

This paper presents an approach to a conceptual understanding of privacy issues, rooted in Luciano Floridi's philosophy of information and information ethics. It draws from Floridi's ideas of ontological information privacy, in combination with other frameworks. It is based on conceptual analysis of a set of material found by a comprehensive search for articles and books discussing Floridi's informational privacy, and a selective search for related relevant materials; sources used were Web of Science, Library and Information Science and Technology Abstracts, and Google Scholar.

Privacy: informational and otherwise
Privacy is a deceptively simple concept. We feel that we intuitively know when we have it, and when we have lost it, understanding is, as in the main Oxford dictionary definitions, as '*a state in which one is not observed or disturbed by other people*' or '*the state of being free from public attention*'. It is often regarded as being a right, and has a long history of being seen as the '*right to be let alone*' (Warren and Brandeis, 1890).

However, privacy is in reality a complex and contested concept, even aside from the issues introduced by digital information systems (Wacks, 2015; DeCew 2018): '*The term "privacy" is used frequently in ordinary language, as well as in philosophical, political and legal discussion, yet there is no single definition or analysis of meaning of the term.*' (DeCew (2019, 1). Studies of the concept in a variety of disciplines have produced numerous definitions, concepts, frameworks, and models for comprehending privacy in myriad settings. A search in *Web of Science* (1970-2019) for the phrases 'privacy model' or 'privacy framework' yields over 400 references; see Tavani (2007, 2008A), Bélanger and Crossler (2011), and Mulligan, Koopman and Doty (2016) for reviews of some of these. However, as Bélanger and Crossler were among the first to point out, most theorising and conceptual analysis of privacy has been carried out in very specific contexts, and for very particular groups, rather than being grounded in broader principles.

Of these privacy frameworks and models, we may note a number of being of potential value to issues of privacy in a library/information context, for example:

- Privacy typologies, of which there are many. One of the seemingly most useful is that devised by Koops, Newell, Timan, Škorvánek, Chokrevski and Galič (2017). Working in the legal context, they classify privacy in two dimensions: the *context*, from purely personal to fully public, and the *emphasis*, from 'freedom from' (being let alone) to 'freedom to' (self-development). On this basis, they identify eight basic privacy types: bodily privacy, spatial privacy, communicational privacy, proprietary privacy, intellectual privacy, decisional privacy, associational privacy, and behavioural privacy. Informational privacy appears as a ninth type, which overlaps, but does not coincide exactly with, the other eight types. Mulligan, Koopman and Doty (2016) analyse privacy in an analogous way, using the dimensions of theory (what kind of entities are included), protection, harm, provision, and scope, though without using these to generate explicit privacy types. Tavani (2008A) recommends a four-fold typology, distinguishing physical/accessibility, decisional, psychological/mental, and informational privacies.

- The multidimensional analysis of privacy mapping due to Mulligan, Koopman and Doty (2016) draws from the idea that privacy is, and will always be a contested concept, multi-faceted and open-ended, mutable according to changing technological and societal conditions, and applicable in different ways for different contexts and uses.

- Nissenbaum's (2010, 2011) framework of contextual integrity critically relates privacy issues to the social context. Flows of personal information are modelled using context-relative informational norms, of which the key parameters are actors (senders, recipients, data subjects), attributes (types of information), and transmission principles (constraints on information flows). This approach seems to have an immediate appeal for the library/information context, as its structure is reminiscent of some widely-used information behaviour models. Indeed, it has been used in a privacy briefing for UK information professionals (McMenemy 2017).

- Mai's datafication model of big data privacy (2016). This includes the *processing of data* as well as the *collection of data* as a major issue for privacy in the digital age, and one with which regulation and legislation struggle to keep up.

- Primiero's more formal theory of information privacy (2016). This gives an axiomatic theory, with precise definitions and rules, for concepts such as information access, information gap, information flow, and network friction, making possible a formal and quantitative analysis of privacy risks and harms, which may be tested and verified empirically.

Floridi's philosophy of information and its relevance to the information sciences
Luciano Floridi has developed a comprehensive philosophical approach to information in all its manifestations, which he states combines both the analytical and continental philosophical traditions. It is set out in three monographs: *The philosophy of information* (2011A), *Information Ethics* (2013), and *The logic of information* (2019). These will be joined in the future by a fourth and final volume, *The politics of information*, to make a tetralogy which Floridi has termed *Principia Philosophiae Informationis*. There are also two texts,

more accessible for those without a strong philosophical background: *Information: a very short introduction* (2010), and *The fourth revolution* (2014). Supporting these books is a large number of chapters and articles. It is an ambitious project, and the only such all-embracing philosophical and conceptual approach to information available today. The previous candidates have been the social epistemology pioneered by librarians Jesse Shera and Margaret Egan, and Popper's three world ontology, heralded by Brookes (1980) as a foundation for information science. Neither has gained wide acceptance within the library/information disciplines; we may note that Floridi has argued against social epistemology as a suitable basis for librarianship (Floridi, 2002), while remarking on Popper's ideas as a stimulus for the development of his philosophy of information (Floridi, 2019, p.95).

It is not therefore surprising that Floridi's philosophy has been examined as a possible contender for providing theoretical and conceptual underpinning for the library and information sciences. The was introduced by Herold (2001), in a wide-ranging survey of theories and philosophies of information which might have some relation to librarianship, and developed by Floridi himself, in papers proposing that library and information science should be regarded as applied philosophy of information (Floridi, 2002, 2004). This proved a controversial suggestion, attracting both support and criticism over the years; see Bawden and Robinson (2018A) for a summary of the debate, and for various perspectives see Ess (2009), Furner (2010), Fyffe (2015) and Van der Veer Martens (2015, 2017). The debate continues, in a multi-authored critical review provoked by the recent publication of *The logic of information* (Gorichanaz, Furner, Ma, Bawden, Robinson, Dixon, Herold, Obelitz Søe, Van der Veer Martens, and Floridi 2019).

We argue that Floridi's philosophy of information deserves to be taken seriously as a foundation for library and information science, for a number of reasons, which are set out fully in Bawden and Robinson (2018A, 2018B, 2018C). We note six here:

- The broad scope of Floridi's philosophy matches the broadest interests of library and information science, and indeed goes beyond them; we can therefore be confident that it can serve as a foundation for all library/information issues.

- Floridi's information ethics addresses directly the concerns of the library/information disciplines and professions: privacy, intellectual property, information access, ethical duties of information providers, etc.

- Since philosophy of information is derived for the specific context of Floridi's fourth (informational) revolution, it is well adapted to deal with the specific issues raised by new digital technologies and applications.

- Concepts within the philosophy of information, such as the fourth revolution, the infosphere, inforgs, and onlife, provide a context and explanation for the disruptive changes being experienced in the information environment.

- Since Floridi's approach is rooted in analytical philosophy, it can naturally support formal definitions and analyses for informational entities and processes.

- A natural role for library/information professionals emerges as 'custodians of the infosphere', from the consideration of ontic stewardship as a natural development of the philosophy of information (Fyffe, 2015; Van der Veer Martens, 2017).

We now turn to the specific treatment of privacy in Floridi's philosophy of information.

Privacy in Floridi's philosophy of information
Luciano Floridi's concept of ontological information privacy have developed over time, as a part of the development of his information ethics: see *inter alia* Floridi (2005, 2006, 2011B, 2013, 2014, 2016, 2017). They are a rich and sophisticated set of concepts, anchored in Floridi's broader philosophy of information: chapter 5 of Floridi (2014) is the most accessible introduction.

At the risk of over-simplification, we can identify several general ideas that characterise a Floridian approach to privacy, which he denotes as a '*radical reinterpretation, one that takes into account the informational nature of ourselves, and of our interactions as inforgs*' (Floridi, 2014, 119):

- Various forms of privacy may be identified; Floridi (2014) notes physical, mental, decisional, and informational. He regards informational as central, and worthy of particular attention. This follows from the idea, central in the philosophy of information, that we are informational organisms, inforgs:

    > '*Informational privacy requires [a] radical re-interpretation, one that takes into account the essentially informational nature of human beings and of their operations as social agents. Such re-interpretation is achieved by considering each individual as constituted by his or her information, and hence by understanding a breach of one informational privacy as a form of aggression towards one's* personal identity' (Floridi, 2006, 111)

    > '*Only within a philosophy of information that sees human nature as constituted by informational patterns do breaches of privacy have an ontological impact. If human exceptionalism is anthropo-eccentrically based on the peculiar status of human beings as informational organisms intrinsically lacking a permanent balance but constantly becoming themselves, like informational works in progress, then a complete lack of privacy is indeed dehumanising.*' (Floridi, 2016, 310)

    Informational privacy may then be explained in terms of information accessibility within an environment, informational gap, informational (or ontological) friction, and information flow.

- Protection of privacy should be identified as protection of personal identity 'my data' writes Floridi (2016), is more like 'my hand' rather than 'my car'. Personal information plays a constitutive role in who I am and who I can become. In Floridi's ontological interpretation, informational privacy and personal identify are

inextricably entwined; in the extreme, complete lack of privacy means loss of identity. 'Who I can become' is essential: we must, in practical terms relevant to information providers, have the freedom to develop ourselves informationally, by reading, writing, and discussing, without the inhibition of being observed in so doing. Privacy, in this perspective, is not just about stopping others from observing who we are, but equally of providing personal space for us to develop into who we are becoming.

- Protection of privacy should be based directly on the protection of human dignity, not indirectly on rights, such as those to property or to freedom of expression. Floridi (2016) notes that, although it often goes unrecognized, the European Union's General Data Protection Regulation has human dignity, rather than human rights, at its foundation. He writes:
  > '*Each of us, as a beautiful glitch, is a fragile and very pliable entity, whose life is essentially made of information. Our dignity rests in being able to be the masters of our own journeys, and keep our identities and our choices open. Any technology or policy that tends to fix and mould such openness risks dehumanising us"* (Floridi, 2016, 310)*.

- Privacy ethics may be too anthropocentric (considering only natural persons) and also too nominalist (considering only individual persons and not groups). Groups may be just as valid an entity as an individual in the sense of being defined by their information, and hence just as entitled to informational privacy; indeed, there occasions when the group is the more natural holder of privacy rights than the individual (Floridi, 2017; Taylor, van der Sloot and Floridi 2017). These latter groups may include, for example, the *ad hoc* collectives produced by predictive and inferential artificial intelligence in domains as disparate as law-enforcement, healthcare, and retail.

- '*Privacy is a function of the informational friction in the infosphere. Any factor increasing or decreasing friction will also affect privacy*' (Floridi 2014, 105). The lower the friction, the lower the degree of informational privacy that can be implemented. Informational friction '*refers here to the forces that oppose the information flow within (a region of) the infosphere ... to the amount of work and efforts required [to] obtain, filter and/or block information*' (Floridi, 2006, 110). It is rather similar to, though broader than, the concept of 'data friction' (Bates 2018). Examples of informational frictions are limited resources (time, computer power, access speeds), physical conditions (distance, noise), inadequate metadata and poor interfaces, lack of information and digital literacy, regulatory and copyright restrictions. Digital technologies, by altering the nature of informational frictions, can both reinforce and erode informational privacy, depending how they are applied.

It seems to us that Floridi's privacy concept is a particularly valuable approach for analysing privacy issues, because of its setting within philosophy of information, and specifically within information ethics, allows a formal analysis of many relevant aspects of this complex topic. It may, of course, be worthwhile to seek to combine it with aspects of the other relevant models, as will be discussed later.

Floridi's ideas on privacy have been critically evaluated by, *inter alia*, Burk (2008), Tavani (2008B), Ess (2009) and Mittelstadt (2017). However, few researchers have as yet made direct use of Floridi's informational privacy concept. Primiero (2016) [see also Barn, Primiero and Barn, 2015] has used four notions from Floridi's ideas of informational privacy - information accessibility, informational gap, information (ontological) friction, and information flow - as the basis for developing a formal model of privacy in a digital environment, while a Masters thesis invokes Floridi's ideas of informational privacy to analyse privacy issues on the Internet, with specific reference to cookies, data mining, and social media use on individual privacy (Arberg, 2018). Wu (2019) has noted Floridi's (2011B) emphasis on the informational nature of personal identity in a study of the need for self-identity as a factor affecting privacy behaviour in the use of social media.

Developing a distinctive approach to information privacy
Taking Floridi's philosophy as the basis for dealing with current privacy concerns leads to five major considerations to guide practical developments:

- that each person is constituted by their information, so that informational privacy is fundamental, overlaying all other privacy types.

- that breach of informational privacy is primarily an aggression against personal identity, and hence that protection of privacy should be based directly on the protection of human dignity, not indirectly on rights, such as those to property or to freedom of expression.

- that explicit protection for group privacy is as important as that for individual privacy.

- that the influence of digital technologies can both defend and damage privacy, and can also change our understanding of it

  A good example is the case of 'big data', which brings its own particular set of privacy challenges, notable anonymization and data protection (Mittelstadt and Floridi, 2016A, 2016B).

  Two privacy-related concepts come to the fore in the infosphere: 'anonymity' and 'obscurity'; the terms are often used essentially synonymously. Floridi (2014) reminds us that anonymity, essentially the unavailability of personal data, due to the difficulty of collecting and processing it, was, and remains, absent in pre-urban and non-urban societies, in which, putting it simplistically, everyone in the village knows everyone else's business. Urbanisation in the nineteenth century brought a considerable degree of anonymity, but digital technologies have the capacity to remove it; when we lament the decline of privacy, we are in many cases lamenting a late-Victorian anonymity. A *Medium* blog post in April 2019 gives an informal, but telling, account of the loss of anonymity in even 'anonymized' data (Bettilyon, 2019).

8

Obscurity refers to the situation in which personal information has been collected and is in principle available, but would require an onerous amount of time and effort to find and use. Hartzog and Stutzman (2013: 26) note that '*Empirical research demonstrates that Internet users rely on obscurity perhaps more than anything else to protect their privacy. Yet, online obscurity has been largely ignored by courts and lawmakers*'. A *New York Times* article in April 2019, on 'why you can no longer get lost in the crowd', gave a very clear description of the loss of obscurity due to digital technologies, and the role of obscurity in allowing the growth and development of individuals, a very Floridian thought (Hatzog and Selinger, 2019)

Of the many and varied digital technologies which threaten anonymity and obscurity, those such as edge computing, tracking devices, life-logging, and Internet of Things may pose particular, and new, risks to privacy; see, for example, Wachter (2019).

- that the key to protection (by public, active and passive approaches) of privacy is the control and optimisation of ontological (information and data) friction in the infosphere.

It is important to note that this does not simply mean adding additional frictions to slow down information flows, in the hope that this may support privacy. Floridi cautions us against any such '*quick and dirty attempts ... to clog the infosphere*', by, for example, banning certain operations on security grounds (Floridi, 2014, 116). Such an approach, besides being doomed to failure, causes unacceptable damage to the proper development of the infosphere, which relies on improving information flows. Floridi advocates instead a thoughtful treatment on personal information, based on a proper analysis of privacy. We suggest that another approach may be to focus on the idea of 'informational balance', in line with the principles of the Slow movement (Poirier and Robinson 2014), which may provide the necessary control without resorting to introduction of arbitrary frictions.

With these considerations in mind, it is tempting to develop a conceptual model for privacy, based on Floridi's principles, augmented as appropriate by aspects of other relevant models. This would have, as components, elements such as: types of privacy; types of harm, and their solutions; individuals and groups affected, and their contexts; informational frictions, anonymity and obscurity; information accessibility, informational gaps, and information flows.

To this, we might helpfully add elements from the analyses and models of information privacy noted earlier. From Mai, we take the essential point that the processing, as well as the collection, of information as an issue affecting privacy, to be included explicitly in any model or framework for privacy. From Primiero, we add the ability to have a formal, objective, quantitative, and verifiable assessment of privacy risks, harms, and solutions; other examples of formal approaches to information privacy, to show the range of possibilities, are given by Hansen (2019) and by Haynes (2018). From Koops et al, we take the typology of privacy, whose extra detail enhances Floridi's ideas. We make the distinction however that, whereas Koops et al. thought of informational privacy as a ninth privacy type,

overlapping the others, we take the Floridian viewpoint that all privacy is informational, and the Koops types are varieties of informational privacy. Nissenbaum provides a set of conceptual entities that enable us to produce a model directly comparable with, or able to be integrated into, well-known information behaviour models. And from Mulligan, Koopman and Doty, we take the idea that any conceptual model should be sufficiently dynamic as to be adaptable to changing contexts, particularly technological.

Interesting though the creation of such a model might be, we should consider that, as already noted, there are a plethora of models and frameworks for privacy, even information privacy; and it is notorious that there are arguably too many conceptual models for information behaviour and for information literacy. It is perhaps better to infuse these latter with an explicit Floridian perspective on privacy, augmented by the elements noted above; emphasising in particular its contribution to individual and group identity and development, and of the informational frictions to which a balance must be found.

None of the well-known or widely-applied information behaviour models have expressly addressed privacy issues, though it seems that it should be feasible to add this in. It would be interesting to consider a privacy extension to the Information Seeking and Communication Model, with its explicit consideration of the relation between sender and receiver of information reminiscent of Nissenbaum's approach (Robson and Robinson, 2013, 2015).

Models and frameworks for information and digital literacy have also generally not included explicit consideration of privacy, although it may be considered implicit in the components dealing with correct behaviour online. Personal privacy is included within the somewhat all-embracing metaliteracy model (Mackey and Jacobson, 2019). Privacy literacy has been discussed as a concept overlapping with, though distinct from, digital literacy (Wissinger, 2017). It may be that the best way forward would be to integrate the privacy perspective proposed here into a metaliteracy model; the idea of privacy for personal development would fit well with the metaliteracy concept.

Conclusions
Floridi's conception of privacy, within his philosophy of information, offers, in our view, the best basis for developing information privacy as a field of research, study, and practice within the library/information disciplines and professions. This is an example of the explicit adoption of theoretical frameworks as a basis for education and practice which we believe are essential for the development of the information sciences

We make three suggestions for research which could take this idea forward: formulate well-known informational privacy issues in terms of Floridi's conception, to assess its value; introduce information privacy concepts into models of information behaviour and information literacy; and investigate quantitative and semi-quantitative privacy modelling, based on a formal analysis of informational frictions.

We also suggest that some of the concepts discussed here - centrality of human dignity, respect for both individuals and groups, balancing of informational frictions, and the value of anonymity and obscurity for individual development - may have a significance beyond the

immediate issues associated with privacy, and may be important for the information professions more generally.

Finally, it is worth saying that Floridi's philosophical vision is a very positive, and indeed inspirational one, and this should count for something in assessing its value as a basis for the treatment of the important and sensitive issue of privacy in the library/information sciences:

> '*Nature's beautiful glitches ... stewards of Being [with an] unclear destiny [in their] moral struggle against entropy ... a thin red line against the vandalism of time*' (Floridi, 2019, 99-100)

> '*in terms of privacy ... the respect of each other's personal information does not have to lead to a world of solipsistic lives, it can be the basis of a society that promotes the value of relations as something to which those who are related wilfully and fruitfully contribute* (Floridi, 2016, 311).

References

ALA (2016). *Library privacy* guidelines. Chicago: American Library Association. Available at http://www.ala.org/advocacy/privacy/guidelines, accessed 6 May 2019.

Arberg, N.L. (2018). *Informational privacy and the internet*. Unpublished Masters thesis, Copenhagen University, Denmark.

Bates, J. (2018). The politics of data friction. *Journal of Documentation*, 74(2), 412-429.

Bawden, D. & Robinson, L. (2018A), Curating the infosphere: Luciano Floridi's philosophy of information as the foundation for library and information science. *Journal of Documentation*, 74(1), 2-17.

Bawden, D. & Robinson, L. (2018B), Supporting truth and promoting understanding: knowledge organization and the curation of the infosphere, *Advances in Knowledge Organization Vol. 16. Challenges and opportunities for knowledge organization in the digital age. Proceedings of the Fifteenth International ISKO Conference, Porto, 9-11 July* 2018. F. Ribero and M.A. Cerveira (eds.), Baden-Baden: Ergon Verlag, pp.17-25.

Bawden, D. & Robinson, L. (2018C). "Never again the in the history of humanity": information education for onlife. Keynote paper presented at the International Symposium of the Future of Education in Information Science (FEIS 2018), Pisa, September 2018. Text summary and slides available in the Humanities Commons repository at https://hcommons.org/deposits/item/hc:20895.

Barn, B.S., Primiero, G. & Barn, R. (2015). An approach to early evaluation of informational privacy requirements. *ACM Symposium on Applied Computing*. Salamanca, April 2015.

Bélanger, F. & Crossler, R.E. (2011). Privacy in the digital age: a review of information privacy research in information systems. *MIS Quarterly*, 35(4), 1017-1041.

Bettilyon, T.E. (2019). Why 'anonymized' data isn't so anonymous [blog post]. *Medium OneZero*, 24 April 2019. Retrieved from https://onezero.medium.com/why-anonymized-data-isn-t-so-anonymous-535d2db75a2d.

Brookes, B.C. (1980). The foundations of information science. Part 1: philosophical aspects. *Journal of Information Science*, 2(3/4), 125-133.

Burk, D.L. (2008), Information ethics and the law of data representations. *Ethics and Information Technology*, 10(2-3), 135-147

Buschman, J. (2016). The structural irrelevance of privacy: a provocation. *Library Quarterly*, 86(4), 419-433.

Calter, M. (2019). Protecting patron privacy in digital resources [blog post], *Scholarly Kitchen blog*, March 13 2019. Retrieved from

https://scholarlykitchen.sspnet.org/2019/03/13/guest-post-protecting-patron-privacy-in-digital-resources.

CAS (2019). *CAS privacy policy statement*. Columbus OH: Chemical Abstracts Service. Retrieved from https://www.cas.org/legal/privacy.

Charillon, A. (2018), *Leading the way: a guide to privacy for public library staff*, Dunfermline: Carnegie Trust. Retrieved from https://www.carnegieuktrust.org.uk/publications/leading-the-way-a-guide-to-privacy-for-public-library-staff/.

DeCew, J. (2018). Privacy. *Stanford Encyclopedia of Philosophy (Spring 2018 edition)*. Retrieved from https://plato.stanford.edu/archives/spr2018/entries/privacy.

Ess, C. (2009). Floridi's philosophy of information and information ethics: current perspectives, future directions. *The Information Society*, 25(3), 159-168.

Floridi, L. (2002). On defining library and information science as applied philosophy of information. *Social Epistemology*, 16(1), 37-49.

Floridi, L. (2004). LIS as applied philosophy of information: a reappraisal. *Library Trends*, 52(3), 658-665.

Floridi, L. (2005). The ontological interpretation of informational privacy. *Ethics and Information Technology*, 7(4), 185-200

Floridi, L. (2006). Four challenges for a theory of informational privacy. *Ethics and Information Technology*, 8(3), 109-119.

Floridi, L. (2010). *Information – a very short introduction*. Oxford: Oxford University Press.

Floridi, L. (2011A). *The philosophy of information*. Oxford: Oxford University Press.

Floridi, L. (2011B). The informational nature of personal identity. *Minds and Machines*, 21(4), 549-566.

Floridi, L. (2013). *The ethics of information*. Oxford: Oxford University Press.

Floridi, L. (2014). *The fourth revolution: how the infosphere is shaping human reality*. Oxford: Oxford University Press.

Floridi, L. (2016). On human dignity as a foundation for the right to privacy. *Philosophy and Technology*, 29(4), 307-312.

Floridi, L. (2017). Group privacy: a defence and an interpretation. In Taylor, L., Floridi, L. and van der Sloot, B (eds.), *Group privacy: new challenges of data technologies*, Cham: Springer, pp. 83-100.

Floridi, L. (2019). *The logic of information*. Oxford: Oxford University Press.

Furner, J. (2010). Philosophy and information studies, *Annual Review of Information Science and Technology*, 44(1), 159-200.

Fyffe, R. (2015). The value of information: normativity, epistemology, and LIS in Luciano Floridi. *portal: Libraries and the Academy*, 15(2), 267-286.

Google (2019). Privacy policy. Mountain View CA: Google LLC. Retrieved from https://policies.google.com/privacy?hl=en-US.

Gorichanaz, T., Furner, J., Ma, L., Bawden, D., Robinson, L., Dixon, D., Herold, K., Obelitz Søe, S., Van der Veer Martens, B. & Floridi, L. (2019). Book symposium on Luciano Floridi's *The logic of information*. *Journal of Documentation*, in press.

Hansen, M. (2019). Differential privacy, an easy case [blog post]. Retrieved from https://accuracyandprivacy.substack.com/p/differential-privacy-an-easy-case.

Haynes, D. (2018). What do we mean by risk? Some thoughts on methods of handling risk in the context of information privacy [blog post]. Retrieved from https://blogs.city.ac.uk/privacycalculus/2018/05/24/what-do-we-mean-by-risk-some-thoughts-on-methods-of-handling-risk-in-the-context-of-information-privacy/.

IFLA (2015). Statement on privacy in the library environment. International Federation of Library Associations. Retrieved from https://www.ifla.org/publications/node/10056.

Hartzog, W. & Selinger, E. (2019). Why you can no longer get lost in the crowd. *New York Times*, 17 April 2019. Retrieved from https://www.nytimes.com/2019/04/17/opinion/data-privacy.html?rref=collection%2Fspotlightcollection%2Fprivacy-project-does-privacy-matter&action=click&contentCollection=opinion&region=stream&module=stream_unit&version=latest&contentPlacement=6&pgtype=collection.

Hartzog, W. & Stutzman, F. (2013). The case for online obscurity. *California Law Review*, 101(1), 1-49.

Herold, K.R. (2001), Librarianship and the philosophy of information, *Library Philosophy and Practice* [online], 3(2). Retrieved from https://digitalcommons.unl.edu/libphilprac/27.

Koops, B., Newell, B.C., Timan, T., Škorvánek, Chokrevski & Galič (2017). A typology of privacy. *University of Pennsylvania Journal of International Law*, 38(2), 483-757.

Mackey, T.P. & Jacobson, T.E. (2019). *Metaliterate learning for the post-truth world.* Chicago: American Library Association.

Mai, J-E. (2016). Big data privacy: the datafication of personal information. *Information Society*, 32(3), 192-199.

McMenemy, D. (2017). Privacy, surveillance and the information profession: challenges, qualifications, and dilemmas? [Powerpoint presentation]. CILIP privacy briefing, 28 November 2017. Retrieved from https://pureportal.strath.ac.uk/files-asset/70450065/cilip_privacy_briefing_mcmenemy.pdf.

Mittelstadt, B. (2017). From individual to group privacy in big data analytics. *Philosophy and Technology*, 30(4)475-494.

Mittelstadt, B.D. & Floridi, L. (2016A). The ethics of big data: current and foreseeable issues in biomedical contexts, *Science and Engineering* Ethics, 22(2), 303-341.

Mittelstadt, B.D. & Floridi, L. (eds.) (2016B). *The ethics of biomedical big data*. Switzerland: Springer.

Mulligan, D.K., Koopman, C. & Doty, N. (2016). Privacy is an essentially contested concept: a multidimensional analytic for mapping privacy. *Philosophical Transactions of the Royal Society A - Mathematical, Physical and Engineering Sciences*, 374(2083), DOI 10.1098/rsta.2016.0118.

Nissenbaum, H. (2011). A contextual approach to privacy online. *Daedalus, the Journal of the American Academy of Arts & Sciences*, 140(4), 32-48.

Nissenbaum, H. (2010). *Privacy in context: technology, policy, and the integrity of social life*. Stanford CA: Stanford University Press.

Poole, N. (2017). Information professionals and privacy - a model [blog post]. Available at http://nickpoole.org.uk/privacy/, accessed 7 May 2019.

Poirier, E. & Robinson, L. (2014). Informational balance: slow principles in the theory and practice of information behaviour. *Journal of Documentation*, 70(4), 687-707.

Primiero, G. (2016). Designing systems with privacy: formal and experimental methods. Retrieved from http://home.deib.polimi.it/schiaffo/TFI/lecture%202%20primiero.pdf.

Robson, A. & Robinson, L. (2013), Building on models of information behaviour: linking information seeking and communication. *Journal of Documentation*, 69(2), 169-193.

Robson A. & Robinson L. (2015). The Information Seeking and Communication Model: A study of its practical application in healthcare. *Journal of Documentation*, 71(5). 1043-1069.

Rønn, K.V. & Søe, S.O. (2019). Is social media intelligence private? Privacy in public and the nature of social media intelligence. *Intelligence and National Security*, 34(3), 362-378.

Tavani, H.T. (2007). Philosophical theories of privacy: implications for an adequate online privacy policy. *Metaphilosophy*, 38(1), 1-22.

Tavani, H. (2008A). Informational privacy: concepts, theories and controversies. In Himma, K.E. and Tavani, H.T. (eds.), *Handbook of Information and Computer Ethics*. Haboken: John Wiley, pp. 131-164.

Tavani, H.T. (2008B). Floridi's ontological theory of information privacy: some implications and challenges. *Ethics and Information Technology*, 10(2-3), 155-166.

Taylor, L., van der Sloot, B. & Floridi, L. (2017). What do we know about group privacy? In Taylor, L., Floridi, L. and van der Sloot, B (eds.), *Group privacy: new challenges of data technologies*, Cham: Springer, pp. 225-237.

Van der Veer Martens, B. (2015). An illustrated introduction to the infosphere. *Library Trends*, 63(3), 317-361.

Van der Veer Martens, B. (2017). New grounds for ontic trust: information objects and LIS *Education for Information*. 33(1), 37-54.

Wachter, S. (2019). Data protection in the age of big data. *Nature Electronics*, 2, 6-7.

Wacks, R. (2015). *Privacy: a very short introduction*. Oxford: Oxford University Press

Warren, S. & Brandeis, L. (1890). The right to privacy. *Harvard Law Review*, 4(5), 193-220

Westin, A.F. (1967). *Privacy and freedom*. New York: Atheneum.

Wissinger, C.L. (2017). Privacy literacy: from theory to practice. *Communications in Information Literacy*, 11(2), 378-389.

Woolf, V. (2002), Montaigne. In *The Common Reader (annotated edn.)*. London and New York: Mariner, 58-68.

Wu, P.F. (2019). The privacy paradox in the context of online social networking: a self-identity perspective. *Journal of the Association for Information Science and Technology*, 70(3), 207-217.

Wu, P.F., Vitak, J. & Zimmer, M.T. (2019). A contextual approach to information privacy research. *Journal of the Association for Information Science and Technology*,