

A STS Approach to Critical Digital Literacy

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ABSTRACT: Borrowing the historically contested term of *digital literacy*, particularly «critical digital literacy» in *Media Studies*, I argue for an extension of its imperatives in accordance with several branches of *Science and Technology Studies* (STS), in order to think and teach about new technologies in educational settings; regarding digital technologies in general, and *information and communication technologies* (ICT) in particular. In the following, brief context addressing critical digital literacy is given, then to be followed by insights from STS traditions that may prove to be fruitful frameworks in the pursuit of digital literacy models.

KEYWORDS: Media Literacy; History of Technology; Algorithmic Ethics; Control; Sociotechnical Assembles.

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CRITICAL DIGITAL LITERACY

In educational settings, digital literacy is often understood as a set of skills that a learner should acquire to make effective use of ICTs. Paul Gilster (1997) abstracted these skills as the competence to: perform internet searching, navigate through hypertext, assemble knowledge, and evaluate content. Tibor Koltay (2011) has pointed out the shortcomings of this approach in the light of emerging technologies and other modes of literacy. For the author, the kind of literacy based solely on competences for use of ICTs is restricted, since it does not account for a critical view of the digital medium (Koltay 2011, p. 216). Hence, he proposes bridging digital literacy, media literacy and information literacy; as, historically, the latter forms of literacy have proved attentive to critical evaluation of media and careful retrieval of information (2011, p. 215), respectively. Besides the long-term-commitment —sometimes, an individual endeavor— to any form of literacy; media, information, and digital literacy have in several cases put their emphasis on formal education to increase awareness of students towards understanding the production of meaning, and construction or organization of reality by media products (Koltay 2011), including the digital forms of expression and communication. Thus, the concept of critical digital literacy rises from the need to reflect upon the digital medium and media, rather than the mere skills of effectively applying digital technologies. However, models and frameworks of critical digital literacy are contested across schools of thought, particularly, within media studies. In the following brief literature review, three approaches are sketched.

First, Hinrichsen and Coombs have developed (2013) a framework for curriculum integration purposes, regarding resources of critical digital literacy. Initially based on Luke and Freebody's model of critical literacy (1990), the aforementioned authors propose a model that encompasses not only digital skills, as in previous

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accounts of digital literacy, but also a shift that would be attentive to digital practices. Their proposal (Hinrichsen and Coombs 2013) includes the following resources —i.e., skills and modes of attention— for critical digital literacy: (1) ‘decoding’ —it refers to a familiarity with the «structures and conventions of digital media, sensitivity to the different modes at work within digital artefacts and confident use of the operational frameworks within which they exist» (2013, p. 8); (2) ‘meaning making’ —awareness of the «reflexive process in which the content, style and purpose of the text¹ is in dialogue with the prior experience, knowledge and responses of the reader [implying understanding one’s own agency as participant in construction of text]» (2013, p. 9); (3) ‘using’ —refers to the «ability to deploy digital tools appropriately [and] to solve practical problems dynamically and flexibly as they arise» (2013, p. 10); (4) ‘analyzing’ —renders into the «ability to make informed judgments and choices in the digital domain [and to] apply critical, aesthetic and ethical perspectives to the production and consumption» of digitized material (2013, p. 11); and, (5) ‘persona’ —the «sensitivity to the issues of reputation, identity, and membership within different digital contexts [and purposeful management and calibration] of one’s online persona» (2013, p. 12). For the authors, the justification for such a framework proceeds from the critical and evaluative skills that are required to engage with digital technologies not only in professional settings, but also on the personal and civic levels (2013, p. 4). Therefore, it is imperative to not only integrate new technologies in education, but also to teach how to think about those technologies.

Secondly, and with a similar guise of justification —critical digital literacy as requisite for using new technologies in education—, David Buckingham (2015) presents a framework for critical digital literacy, relying on media literacy concepts. The concepts he repurposes for digital media, are: (1) ‘representation’ —it points to the fact that all forms of media, including digital ones, always do represent reality in certain ways with embedded values and ideologies, therefore, to be literate is to question authority, reliability, bias, and exclusion in the information one faces with (2015, p. 25); (2) ‘language’ —in the domain of language, digital literacy would «involve a systematic awareness of how digital media are constructed, and of the unique «rhetorics» of interactive communication» (2015, p. 26); (3) ‘production’ —involves an understanding of the means of production of digital media, including the awareness of commercial influences and interests, advertising targeting in the internet, promotion, sponsorship, non-commercial interests, and persuasion (2015, p. 26); and, (4) ‘audience’ —entails an «awareness of the ways in which users gain access to sites, how they are addressed and guided (or encouraged to navigate), and how information is gathered about them» (2015, p. 26). A tidy summary of these concerns is advanced by the author in the following passage:

[Students should] be able to evaluate and use information critically if they are to transform it into knowledge. This means asking questions about the sources of that information, the interests of its producers, and the ways in which it represents the world; and understanding how these technological developments are related to broader social, political and economic forces (Buckingham 2015, p. 25).

Finally, a reconceptualization of critical digital literacy has been done by Luciana Pangrazio (2016). Her assessment of previous models of digital literacy —either if they advance technical competence with ICTs or evaluative/critical elements— is that they tend to neglect what is specific about *the digital* in contrast to other forms of media. It is with this background that she develops a model that takes into account: (1) ‘transcendental critique’ —to «encourage the examination of social and political issues related to digital media use, and provoke critical reflection

¹ In this context, «text» is to be taken in its widest sense. Not only referring to written text, but to all sorts of texts that can be found in digital mediums; such as, image, audio, video, hyperlinks, web resources, databases, etc.

on personal digital practices and identities» (2016, p. 171); (2) ‘visualization’ —drawing on digital aesthetics and data visualization to «decontextualise or defamiliarise digital texts, tools and practices with the goal of suspending or interrupting commonly held assumptions and views» (2016, p. 171); (3) ‘critical self-reflection’ —used to «explore the relationship between personal, affective responses to digital texts and broader ideological concerns» (2016, p. 171); and, (4) ‘interpretation and re-articulation of digital concepts’ — «questioning the rhetoric that has come to shape the way we think about digital media», and re-articulate rhetoric to apply it in «alternative ways that seek to counter hegemonic discourse» (2016, p. 172).

STS TURN TO CRITICAL DIGITAL LITERACY

The argument I want to bring across concerns the introduction of certain STS branches to extend the three mentioned models. STS is a field that «investigates the institutions, practices, meanings, and outcomes of science and technology and their multiple entanglements with the worlds people inhabit, their lives, and their values [and explores] the transformative power of science and technology to arrange and rearrange contemporary societies» (Felt et al. 2017, p. 1). With a turn from *Media Studies* to STS, perhaps fruitful conceptual tools would be added to the already rich repertoire of digital literacies. Specifically, I suggest the following list of approaches to critical digital literacy:

- 1) *Skepticism towards hyperbolic narratives* in media portrayals, and commercial campaigns, of digital technologies. This point will be justified drawing on literature regarding the public understanding of technological change and innovation, and the hegemony of technoscientific future-oriented cultures — e.g., in Brown (2003) and Puig de la Bellacasa (2015).
- 2) *Critical views regarding metaphors* used in digital domains. Not to advance a cynical view, but rather to promote nuanced descriptions that attend to practices surrounding metaphors and rhetoric. Among others, the literatures to support this point address the performativity and role of metaphors within *the digital*; for instance, Michael and Lupton (2016) and Couldry (2017).
- 3) *Attention to situated histories* of digital technology, infrastructure, and the politics of artefacts. Literatures to conceptualize this point regard the history and politics of technology and infrastructures, and the situatedness of practices in technoscience; such as Bijker (2010), Star (1999) and Haraway (1988).
- 4) *Care for algorithmic ethics, governance, and affordances*; including concerns regarding data privacy, algorithmic transparency, inequalities and discrimination, database bias, etc. Articles such as Ananny (2016), Neyland (2016), Vertesi (2016), and other ‘algorithm case studies’ will be convenient to support this point.
- 5) *Understanding how control operates in digital forms*, and what types of control arise with digital mediation. To this point, literatures regarding the history and analysis of digital technologies, such as Galloway (2004) and Franklin (2015), will be considered.
- 6) *Digital technologies analyzed as sociotechnical assemblages* to, for instance, better understand the distribution of agency in such assembles. Important literatures address *actor-network theory* —e.g., Latour (2005) and van Dijck (2012).

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REFERENCES

- Ananny, Mike (2016). «Toward an Ethics of Algorithms: Convening, Observation, Probability, and Timeliness». *Science, Technology, & Human Values* 41 (1): pp. 93–117. doi: 10.1177/0162243915606523.
- Bijker, Wiebe (2010). «How is Technology Made? That is the question!». *Cambridge Journal of Economics* 34 (1): pp. 63–76. doi: 10.1093/cje/bep068.
- Brown, Nik (2003). «Hope Against Hype: Accountability in Biopasts, Presents and Futures». *Social Studies of Science* 16 (2): pp. 3–21.
- Buckingham, David (2015). «Defining digital literacy: What do young people need to know about digital media?». *Nordic Journal of Digital Literacy* 1 (4): pp. 21–34.
- Couldry, Nick (2017). «The Myth of Big Data». In: *The Datafied Society: Studying Culture through Data*, edited by Mirko Schäfer and Karin van Es. Amsterdam: Amsterdam University Press, 2017, pp. 235–239. doi: 10.5117/9789462981362.
- Felt, Ulrike, Rayvon Fouché, Clark Miller, and Laurel Smith–Doer (2017). «Introduction to the Fourth Edition of the Handbook of Science and Technology Studies». In: *The Handbook of Science and Technology Studies*, edited by Ulrike Felt, Rayvon Fouché, Clark Miller, and Laurel Smith–Doer. 4th ed. Cambridge: The MIT Press, 2017, pp. 1–26.
- Franklin, Seb (2015). *Control: Digitality as Cultural Logic*. Cambridge: The MIT Press.
- Freebody, Peter, and Allan Luke (1990). «Literacies programs: Debates and demands in cultural context». *Prospect: Australian Journal of TESOL* 5 (3): pp. 7–16.
- Galloway, Alexander (2004). *Protocol: How Control Exists after Decentralization*. Cambridge: The MIT Press.
- Gilster, Paul (1997). *Digital Literacy*. New York: Wiley Computer Pub.
- Haraway, Donna (1988). «Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspectives». *Feminist Studies* 14 (3): pp. 575–599. doi: 10.2307/3178066.
- Hinrichsen, Juliet, and Antony Coombs (2013). «The five resources of critical digital literacy: A framework for curriculum integration». *Research in Learning Technology* 21 (1): pp. 1–16. doi: 10.3402/rlt.v21.21334.
- Koltay, Tibor (2011). «The media and the literacies: Media literacy, information literacy, digital literacy». *Media, Culture & Society* 33 (2): pp. 211–221. doi: 10.1177/0163443710393382.
- Latour, Bruno (2005). *Reassembling the Social: An Introduction to Actor–Network–Theory*. New York: Oxford University Press Inc.
- Michael, Mike, and Deborah Lupton (2016). «Toward a manifesto for the ‘public understanding of big data’». *Public Understanding of Science* 25 (1): pp. 104–116. doi: 10.1177/0963662515609005.
- Neyland, Daniel (2016). «Bearing Accountable Witness to the Ethical Algorithmic System». *Science, Technology, & Human Values* 41 (1): pp. 50–76. doi: 10.1177/0162243915598056.

- Pangrazio, Luciana (2016). «Reconceptualising critical digital literacy». *Discourse: Studies in the Cultural Politics of Education* 37 (2): pp. 163–174. doi: 10.1080/01596306.2014.942836.
- Puig de la Bellacasa, Maria (2015). «Making time for soil: Technoscientific futurity and the pace of care». *Social Studies of Science* 45 (5): pp. 691–716. doi: 10.1177/0306312715599851.
- Star, Susan Leigh (1999). «The Ethnography of Infrastructure». *American Behavioral Scientist* 43 (3): pp. 377–391. doi: 10.1177/00027649921955326
- van Dijck, José (2012). «Facebook and the engineering of connectivity: A multi-layered approach to social media platforms». *Convergence: The International Journal of Research into New Media Technologies* 19 (2): pp. 141–155. doi: 10.1177/1354856512457548.
- Vertesi, Janet (2016). «Seizing the Digital». *Engaging Science, Technology, and Society* 2 (1): pp. 180–192. doi: 10.17351/ests2016.75



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