

# Ten Challenges for Digital Humanities and the Way Forward

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## ABSTRACT

Regardless of whether one supports Digital Humanities as a discipline in its own, ‘traditional’ Humanities are transforming with the incorporation of computational approaches. In this short position paper, we outline ten challenges that we consider important and propose to kick-off an in-depth dialog for the future shaping of Digital Humanities, without prejudices and preconceptions. The presentation of the challenges situates them with respect to trends and evolutionary developments in society and technology, and some first comments are being made in kicking-off the dialog for the shaping of the future.

## KEYWORDS

Challenges, Computational Methods in Humanities, Cultural Informatics, Digital Humanities, Future Directions, Heritage Science

## INTRODUCTION

Traditionally, the Humanities are based primarily on critical or speculative methods and embed a significant historical element, rendering the domain largely distinguished from the Natural and Computational Sciences that are mainly based on empirical approaches. Digital Humanities may have been often considered as a sort of ‘auxiliary science’ (*‘Hilfswissenschaft’*) serving the needs of other disciplines and fields of Humanities, focusing on the provision of digital tools and methods to tackle research questions in Humanities. On the other hand, it is still in the stage where many of its practitioners shy away from considering it a (coherent) discipline on its own. Typically, it is considered to be an academic field concerned with the application of computational tools and methods to traditional Humanities disciplines, like History and Archaeology<sup>1</sup>. In addition to the contribution of Computer Science, there are other disciplines to greatly support the Humanities studies, like Archaeometry, which is a mixture of Physics, Chemistry, Math and Computer Science. The use of the word in established phrases, like the ‘Digital Art’ – the art that is being produced by digital means – reveals that there might be structural difficulties in using an analogy for the definition of ‘Digital Humanities’ in more compact forms. As a result, there is a tendency to regard the field as

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an application of Computer Science in Humanities or vice versa, the application-oriented equivalent of Humanities with the assistance of computer technologies.

There is a need for the people who feel like or identify themselves as ‘digital humanists’ to define a roadmap that will provide them the means to implement an ambitious agenda. The term ‘digital humanist’ denotes a person involved in cross-disciplinary work related to or including Humanities Studies and Computer Science, and is rather not convincing, probably, not attractive either – as the term ‘computer scientist’ might have been a couple of decades ago. The aim of the enterprise is to prove the functionality and the value that Digital Humanities can bring to Humanities, eventually upgrading the former from the status of a ‘servant discipline’ of the latter, or on the other hand, to totally diffuse and embed the former within the latter and cancel the need for the adjective ‘digital’.

In this position paper, we try to identify, layout and comment on ten (10) challenges in the research agenda in Digital Humanities.

## **THE CHALLENGES**

In the following paragraphs, we list some of the challenges, which we consider to be at the heart of the research agenda in Digital Humanities for the future. It is our understanding that this might be a draft agenda, one which other academics and research colleagues will be able to elaborate by providing their views.

### **Challenge 1: Stop Caring (So Much) to Maintain the Balance With Humanities**

The first challenge is the most important one and it may take some time to materialize; however, it is worth putting it first because it deserves it, as it focuses on the balance with traditional Humanities. Do we expect Digital Humanities to come up with answers on questions posed by the ‘traditional’ Humanities? Or are the former entitled to come up with iconoclastic and novel methods that might pose new questions and challenges to issues that have been regarded as settled or answered? To a greater or lesser extent, all challenges that follow below have their origin back to this first ‘foundational’ challenge.

### **Challenge 2: The Applications Make the Science**

On the same par with the maxim that the medium is the message, we should feel comfortable to admit that the applications digital humanists come up with form the basis of this ‘new’ Science. It is the digital humanists who design or build or help shape applications and tools for the better study and interpretation of the (traditional) Humanities though they do not pose the research questions and they do not drive the research inquire – the latter is not part (at least for the time) of Digital Humanities but of the traditional discipline. We could name all the topics of some established Digital Humanities Conferences – and what a long and exciting list of topics that would be. We would like to regard them as forming the basis of a classification scheme like the one we have been using in Computer Science for years (Coulter, 1997) and which – and this is the important point – continuously evolves! The first classification system appeared back in 1964 and was extensively revised six times since then – and the versions appeared whenever people felt there was a need for a new version namely in 1982, in 1983, in 1987, and then in 1991 and 1998, till the current version of 2012. The maxim here might be something like: ‘everyone who self-defines their research as part of Digital Humanities is welcome!’

### **Challenge 3: Taming the Language**

Language is important in every human activity – however, it is well known that computer scientists write articles in English without being competent in reading or writing English literature. With Humanities, the case is different: language, at a great extent, defines the research. We cannot imagine Law in the U.S.A., or Germany, or the U.K., or Denmark, or India practiced using a ‘sterilized’ and context-neutral language; nor for Philosophy or History and any other discipline or field of Humanities.

In other words, the point of seizing the opportunity and facing potential challenges in Digital Humanities, is developing the means to help bridge the gaps between different scholarly languages. If digital humanists help the traditional humanists overcome some of their biggest challenges, such as the mastering of natural language in all different types of contexts or situations, we will have reached an important milestone in the quest of establishing Digital Humanities in the minds of the people. Language Technologies have evolved in a way that resources and processing tools are clearly separated. In the past, rule-based systems contained very special lexica that had little to do with human oriented lexica and grammar rules that are completely ‘unnatural’ in terms of everyday human use. Today’s corpora and lexica are very close to human oriented resources while the tools that process them are language independent to a considerable degree (though their ‘naturalness’ has rather decreased than increased).

#### **Challenge 4: Taming the Big Data**

Much of the content or the information out there is not yet digitized – or it is, but on a rather poor scale or extent. So, even if there are digital books, no one has built out of the presented taxonomies or classifications, any ontologies so that young researchers will be able to compare works and also contribute with their own ideas and research. As for annotation tools, it is better not to elaborate at all: Humanities urgently need a killer application (or two or even more) that would help people’s routine tasks in annotating texts or images or videos or any other type of data structure – and there is still nothing convincing, or at least something of a significant level of adoption and broad recognition. If humanists regard digital humanists as ‘servants’ they may have some good reasons – and actually they might have some good reasons to regard us as bad servants as we seem to be unable to meet their needs – at least as of today.

#### **Challenge 5: The Missing Curriculum**

There is an elephant in the room! It may or may not be a white elephant<sup>2</sup> but we can all feel it. What would be economics without Samuelson’s book? In Digital Humanities, there seems to be little aspiration or ambition for us to write a textbook – even a wrong textbook would be better than a missing textbook. It is easy to come up with an edited book – a monograph may need the time that we all don’t spare. Apparently, we can always work in teams and start from the end: what should a student learn from an undergraduate course on Digital Humanities? Would that mean that we need to differentiate between students of STEM<sup>3,4</sup> and students of the Humanities? Our answer is: No – it would be a mistake to build on this assumption. It is well known that universities offer courses on Probability Theory or Statistics for mathematicians and some more down-to-earth application-oriented adaptations ‘for engineers’. But it is the very same science they talk about, with some simplifications only in the latter case. So, we should put effort in developing curricula and write textbooks, expecting some of them to be more successful than others. In the first era of the automotive industry there were thousands of car manufacturers -- we badly need this spirit of entrepreneurship here in the area of Digital Humanities education.

#### **Challenge 6: Helping to Build the Synergies That are Missing**

Some of the disciplines in Humanities have rather old traditions, several of their ‘castles’ date back to Antiquity, while others have been moulded to various scholarly disciplines from the late 18<sup>th</sup> century onwards. Language and Law, Philosophy and History, they all have learned to understand themselves as distinct and often enough compartmentalized enterprises. Even nowadays, when terms like inter- or cross-disciplinarity are common or in fashion, it is still difficult to change the mentality and the attitude of the young generations who were educated to think ‘inside the box’. However, with the ongoing digitization of knowledge, new challenges are ahead for all the Humanities, as they increasingly face similar issues, even if they are not aware of it yet. A lot of inter- and cross-disciplinary methodological and theoretical ‘bridges’ will arise offering unprecedented opportunities to Digital

Humanities in particular: we can contribute to the integration of all various disciplines and fields of research in Humanities by offering a common framework and tools (we have mentioned this type of tools above, in Challenge 4) to carry out the everyday tasks of the particular field.

### **Challenge 7: Mixing up the Methods**

Mixed methods research is not something new in Science. The term appeared first back in the 1980s and at that time it was mentioned as ‘multi-methodology’ and was related to the combined use of quantitative, qualitative and other types of genres of research methods that may be used either in an ad hoc way to fit specific needs of a problem under investigation, or reflect idiosyncrasies of a problem that if it is treated with some other ‘conventional’ or ‘standard’ means, will offer suboptimal results. Numerous examples show that at some point the researcher is unable to follow a strict methodology, therefore the need occurs for continuing with some other method; the situation is the same in sports where we have multiple-stage competition such as the triathlon or the pentathlon, involving the completion of three or five disciplines respectively. Imagine the case of developing an application that can recognise or even measure the emotions of people when seeing Bernini’s Martyrdom of Saint Lawrence at the Uffizi Gallery in Florence. This may seem like a long shot for today’s technologies but some of the necessary technologies may already be here and what is needed is their contextualization and some type of ‘cultural appropriation’ (Young, 2010) to reflect the practices, principles and values of a particular area in Humanities.

### **Challenge 8: It is the Semantics, Scholar!**

No need to refer to a catchphrase that involved economy but in this case, it is the solid ground of research in Semantics that offers a common basis able to help improve the position and the impact of Humanities in the modern world. Semantics is supposed to deal with the study of meaning – and it certainly did (though in a quite limited way) till it ‘met’ Computer Science and a little later experienced its evolution into what we call ‘the Semantic Web’. Here, the main idea relates to the description of types of data in the form of models that can then be represented by means of graphs describing relationships amongst them. However, shouldn’t this be the core idea of what every Humanities scientist, scholar and researcher is doing? Can we imagine Michel Foucault, Jean Baudrillard and Louis Pierre Althusser working on their tablets and building ontologies that they would share with their followers and among themselves, to provide annotations with comments and endless chains of arguments? One may wonder: why hasn’t this happened? Why haven’t we convinced humanists to invest on such new technologies? Probably we haven’t thought at all about this (though someone may see here that this is quite close to the idea of philosophical languages that was ‘tried’ in the seventeenth century) – so the answer to the previous rhetoric question is that this hasn’t happened yet, but it will eventually (have to) happen in the next ten years. In such an enterprise, the role of the Semantic Web may be catalytic and while several conceptualizations in Humanities may not be trivial to bring in some graph-centric structure, the choice of paradigm one uses might be as important as the solution itself.

### **Challenge 9: Economisation of Humanities**

The term ‘monetisation’ was considered as a swear word in Humanities and may still be the case. On the other hand, it can be regarded simply as a result of a need. Can we afford to educate archaeologists if their produce or their knowledge capital will not be consumed or ‘enjoyed’ (to use a milder term) by the citizens? The ivory tower of Humanities has become a golden cage: now, under the pressures of the economy, the society that faces austerity may show Humanities the road to the dustbin. Humanists cannot afford to remain disconnected from the real world, they need to give back to the society the (processed) fruits of the knowledge themselves daily ‘dive’ into; why shouldn’t the society ‘bathe’ into this knowledge? The solution to this problem may again be the instrumentalisation of Digital Humanities not as a servant (‘auxiliary science’, as mentioned above) but as a peer to help

Humanities on their last mile to reach the society. The latter shouldn't necessarily be seen as a negative development at all. As recognized in (Gassée, 2015), 'the limitations of algorithmic curation of news and culture has prompted a return to the use of actual humans to select, edit, and explain', thus setting the stage for a new generation of human curators that will need to deal with all the bulk amounts of automatically selected and fetched data.

### **Challenge 10: Helping Find, Keep and Re-Invent the Human(ities) Identity**

Burdick, Drucker, Lunenfeld, Presner, & Schnapp (2012) open a chapter devoted on 'Provocations' with the remark that "The era of Digital Humanities has just begun, but it may be coming to an end". Some of the reasons that the authors present, relate to the proliferation of technologies into our daily life that makes Digital Humanities seem like reflecting some kind of a 'banality of the inevitable'. However, and if seen from another point, Digital Humanities should now feel comfortable that after the collapse of the idea for a 'grand narrative' as presented in (Caputo, 1997) and postmodernism (Lotard, 1979), there is a need to replace such challenges by focusing on specific local narratives or themes. And though some of them or most of them may still share a general or common *air de famille*, there may be no need to find some unifying theory or *exegesis* to bring them together. The potential uses of the Web both as an enabling technology and as a metaphor for 'things yet to happen' may help re(de)fine the expectations we have from Digital Humanities. Semantic Web applications, with an increasing emphasis on the use of statistics based approaches, will in the future help build better and more accurate applications for a variety of themes that may be attached to larger 'world models', and decrease dramatically the cost of knowledge acquisition. While this may seem like the improvement that it definitely is, it doesn't reduce the responsibilities carried by the humans as makers (*homo faber*) of their own history. And in any case Semantic Web is not a panacea for semantic problems since it is based on language and we assume that technology today can work on multimodal semantics. However, for the purposes of human communication language remains the most important means and in this sense Semantic Web that has language as its backbone and its flesh (to a large extend) is the most expressive and reliable tool as of today.

## **CONCLUSION**

Digital Humanities may have always been at the edge between two worlds. On the one hand, given their need to receive support from the software technologies and methods, they depend on Computer Science Technologies and, lately with an incremental pace, on Semantic and Web Technologies. On the other hand, they aim to serve the needs and fulfil the expectations of the scholars and researchers in the Humanities. As a result, Digital Humanities try to both find a place in the 'map' and get the necessary momentum that will enable it to become a possible game changer in the way we perceive these Two Cultures (Snow, 1959) that may belong together but have not been given the means to grow together as yet. We hope that our ten challenges may be viewed as some type of trigger to such a dialogue.

We also hope that this attempt for meaning making will inspire individual researchers or scholars from the field of Digital Humanities to enter in a fruitful exchange and enrich it by accumulating information on similar experiences and contexts.

It may be advisable to start the discussion for the future of Digital Humanities from the standpoint of Semantic Web and Language technologies; both these fields have faced similar difficulties to mature and get the recognition and acceptance they deserve from other disciplines. If one considers that all future developments in the human intellect will either take place at or will be documented by the Web (as a *locus* that comprises a multitude of large-scale socio-technical systems, such as the World Wide Web, and combines research for different disciplines), then one may consider that this will be the inevitable *Heimat* (in German for homeland) of, potentially, every development, novelty and innovation in Digital Humanities.

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## ENDNOTES

- <sup>1</sup> Some interesting definitions and descriptions can be found in numerous resources, among which are the following, [http://www.humanitiesblast.com/manifesto/Manifesto\\_V2.pdf](http://www.humanitiesblast.com/manifesto/Manifesto_V2.pdf), [https://en.oxforddictionaries.com/definition/digital\\_humanities](https://en.oxforddictionaries.com/definition/digital_humanities), <https://cdh.princeton.edu/resources/new-to-dh/>, [http://guides.library.duke.edu/digital\\_humanities](http://guides.library.duke.edu/digital_humanities), <http://www.iath.virginia.edu/hcs/rockwell.html>, <http://digitalhumanities.org/dhq/vol/2/1/000020/000020.html>, [http://blogs.ucl.ac.uk/definingdh/files/2013/10/Chapter-6\\_EV.pdf](http://blogs.ucl.ac.uk/definingdh/files/2013/10/Chapter-6_EV.pdf), <http://digitalhumanities.org/dhq/vol/3/3/000065/000065.html#p2>, <https://whatisdigitalhumanities.com>, <http://libguides.northwestern.edu/dh>, <http://libguides.usc.edu/c.php?g=235247&p=2220309>, <https://mkirschenbaum.files.wordpress.com/2011/03/ade-final.pdf>, [http://jeffreyschnapp.com/wp-content/uploads/2013/01/D\\_H\\_ShortGuide.pdf](http://jeffreyschnapp.com/wp-content/uploads/2013/01/D_H_ShortGuide.pdf)
- <sup>2</sup> The ‘white elephant’ concept taken from 1882 Mark Twain’s *The Stolen White Elephant*, which focuses on the inept activities of some detectives in New Jersey in trying to find a stolen Siamese white elephant (a gift to the Queen of England) that was right in front of them all along.
- <sup>3</sup> Science, Technology, Engineering and Mathematics.
- <sup>4</sup> We are aware that nowadays there is STEAM with the inclusion of “Arts”, which somehow aims to bridge such a gap.

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