
RESEARCH ARTICLE

Translation Paradigms: Translation in the Development of Digital Humanities

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ABSTRACT

Translation research from the perspective of digital humanities is not only a methodology but also a research paradigm. The emergence of translation research from the perspective of digital humanities not only led to significant changes in translation research methods but also greatly expanded and deepened translation research. This article clarifies the definition of digital humanities in translation studies, traces the origin of digital humanities theory, sorts out the relevant research progress, discusses the application fields and advantages of digital humanities, and puts translation studies in the context of digital humanities development. By combing and analyzing the changes and developments, it discovers the development prospects of the new translation paradigm from the perspective of digital humanities so as to provide reference and inspiration for promoting the development of translation studies under the digital humanities approach.

KEYWORDS

Digital humanities; translation studies; translation paradigm

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1. Introduction

Digital humanities, also known as humanities computing or computing in the humanities, is an interdisciplinary field that applies modern computer and network technology to traditional humanities research and teaching. John Unsworth, an expert in the field of digital humanities in the United States, believes that digital humanities (or humanistic computing) is a descriptive practice determined by the needs of efficient computing and humanistic communication, a method of modeling or simulation, a way of reasoning, and a series of ontology practice (Unsworth 2002). It combines the "distant reading" strategy in the big data era with the "close reading" method in the traditional print media era and is widely used in linguistics, history, geography, library and information science, and other fields. Digital humanism attempts to understand the fundamental changes in current culture and society and forms a critical reflection movement around the emerging discourse system of digital humanities (Michael Cronin, 2012). This article explores the digital humanities approach in translation research, which is a new academic model and organizational approach for translation research based on computer and network technology. It has two basic characteristics: 1) Based on computer technology or network technology, it uses new technology, and 2) Based on large-scale text processing or data calculation, it conducts cross-media translation research that cannot be realized by traditional research methods. However, it should be noted that digital humanities is not equivalent to pure computer technology. The former is full of subjectivity, ambiguity, scenario, emotion, and contingency, so it is based on qualitative research; the latter is based on standardization, structuring, regularity, and eliminating uncertainty, and excels in quantitative processing (Burdick, A., Drucker, J., Lunenfeld, P., Presner, T., & Schnapp, J, 2016). In other words, only translation studies that are designed and implemented from a humanistic perspective and integrated with computer technology can be regarded as translation studies under the digital humanities approach.

2. Literature Review

2.1. *The Rise and Development of Digital Humanities*

The use of the term “digital humanities” is generally believed to have started with *A Companion to Digital Humanities*, written by Schreibman et al. (Schreibman, S., Siemens, R., & Unsworth, J., 2004). Just similar to the *Humanities Computing Yearbook*, which was published 10 years ago (Lancashire, I. (Ed.), 1991; McCarty, W., & Lancashire, I., 1988), this collection of papers aims to collect representative research directions in the field to demonstrate the broader subject inclusiveness of the field. Starting from the publication of *A Companion to Digital Humanities* in 2004, the Alliance of Digital Humanities Organizations was established in 2005, the Digital Humanities Initiative was launched in 2006, and the Digital Humanities Quarterly was launched in 2007, allowing the term “digital humanities” to sweep the world in just a few years (Vanhouette, E, 2016). Multiple bibliometric analysis studies have also shown that the rise of digital humanities occurred around 2006-2008 (Gao, Jin, 2020).

Digital Humanities is developed from the fields of Computing in the Humanities and Humanities Computing. Since the 1960s, there has been a wave of large-scale “digitization” in the humanities, including the digitization of research objects, the digitization of analysis tools, and the digitization of research processes. Driven by digital technology, the research landscape of the humanities has undergone tremendous changes, and digital humanities has emerged as the times require. It has become a cutting-edge interdisciplinary subject that has developed rapidly in recent years and has continuously spawned new research hotspots.

Digital Humanities is broadly defined as “research on the intersection of computing tools and all cultural products” (Robinson, L., Priego, E., & Bawden, D, 2015). As a typical interdisciplinary research field, its scope is wide, including linguistics, literature, history, and other disciplines. Internationally, the field of digital humanities has gradually formed a clear academic community. In international organizations, the leading International Alliance of Digital Humanities Organizations has been formed to popularize research results globally through the annual Digital Humanities Conference. In terms of research centers, more than 180 digital humanities research centers have been established around the world, such as the Humanities Computing Center of King’s College, the Humanities Computing Research Center of King’s College London, the Digital Humanities Center of Columbia University, and the Humanities Laboratory of Stanford University, etc., which has promoted the further expansion of digital humanities in the world. At the same time, countries around the world are actively promoting institutional construction, scientific research, and international cooperation in digital humanities. A number of digital humanities projects, such as the Digging into Data Challenge in the United States, the Slade Archive Project in the UK, and eAQUA in Germany, have rapidly developed, and the influence of digital humanities as a new topic is constantly increasing worldwide.

Digital humanities is a frontier discipline in which computer technology is applied to humanities research. The reason why it is called a discipline is that the previous era of “digitization” is coming to an end, and it will be replaced by “computation” that increasingly penetrates into culture, systems, and daily life. The so-called digital humanities is the application of computational thinking, computational technology, or computational methods in the humanities. Its earliest concerns were the development of digital tools and the construction of archival databases, a threat to the humanities themselves because of their technological origins outside the humanities. However, with the popularization of computing technology and computer applications, humanities scholars have gradually shifted from the instrumental and mechanized processing of humanities materials (that is, the sorting, access, and dissemination of these materials) to how to use computing tools and technology to solve practical problems within the humanities, that is, how to deal with the relationship between computers and human brains, technology and culture, machines and human.

2.2. *The Coupling of Digital Humanities and Translation*

“Digital Humanities” arose from the connection between mathematics and linguistics. Mathematics is characterized by precision, rigor, and logic and has always been regarded as the most important natural discipline, while language is fuzzy, ambiguous, and irrational, and linguistics is regarded as a typical humanities discipline. The two seem to constitute the poles of human knowledge, but the emergence of computers has contributed to this beautiful marriage. The rapid development of modern information technology based on mathematics has made it possible to use digital methods to quickly process non-numerical symbols such as language. The combination of mathematics and linguistics produces computational linguistics (computational linguistics), whose mechanism is to establish formalized mathematical models, use programs on computers to analyze and process natural languages and aim to use machines to simulate part or even all of human language ability. For example, “machines collect, store, retrieve, count, grammatically tag, and syntactically semantically readable natural language texts, and are widely used in fields such as text analysis, lexicography, translation style analysis, and machine translation” (Zhang Zheng 2003: 44), which is the concrete embodiment of digital humanities.

British mathematician A.M. Turing foresaw that future computers would pose new questions for natural language research. In 1950, he pointed out in his article *Computers and Intelligence* that “machines will eventually compete with humans in all fields of intelligence” (Turing, 1950:460) and proposed the famous “Turing Test.” American linguist Noam Chomsky applied the

mathematical finite automatism theory and recursive function theory to natural languages such as English and made unique and original contributions to linguistics research. At present, the connection between mathematics and linguistics is getting closer and closer. Mathematics has shown its talents in the research practice of linguistics, while linguistics has become a more detailed, broad, objective, and accurate research subject with the help of mathematics. Attributes lay a theoretical foundation for translation studies under the digital humanities approach. This is because translation studies cannot be separated from the study of language. Any translation theory is a linguistic theory, and there is no translation that does not involve language conversion.

In addition, Dutch translator James Holmes made specific plans for the content that translation research should cover. In his vision, translation research is an empirical discipline that includes two categories: pure translation research and applied translation research (Holmes 2021: 68-70); the two inspire each other and constitute an organic whole of translation studies. As shown in the figure, according to Holmes' classification, the application cases of digital humanities in different fields of translation studies are demonstrated.

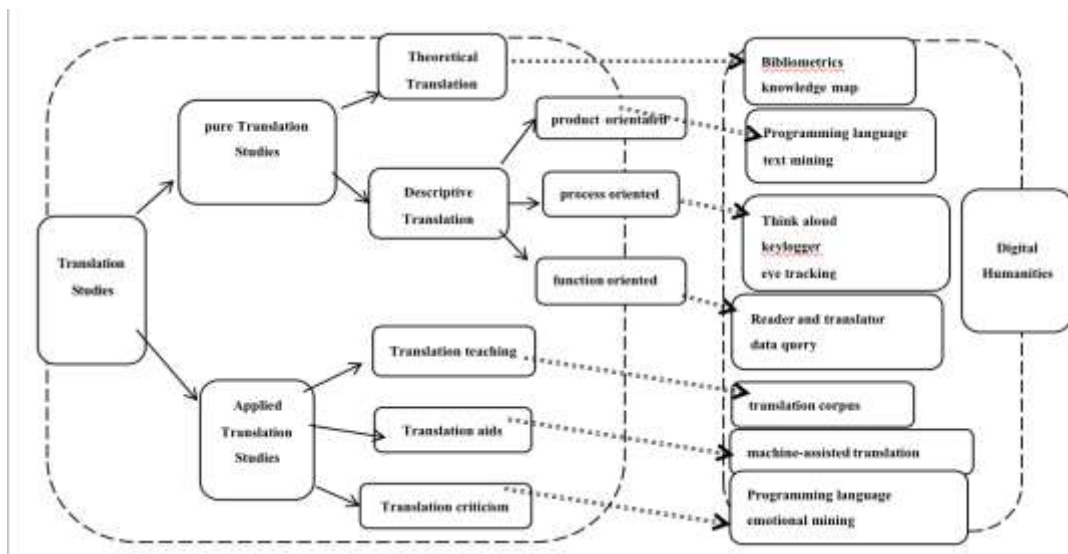


Figure 1: Holmes Taxonomy of Translation Studies and Digital Humanities Research Approaches

For a long time, translation research has been using speculative research methods, and the academic community often induces and summarizes the regular characteristics or essence of translation phenomena through logical deduction and inference of concepts and judgments. However, since the 1980s, empirical translation research has emerged and received increasing attention from the academic community. Empirical translation research refers to the large-scale observation and investigation of translation products or processes or the application of experimental methods to obtain data and evidence about translation products or processes and, based on this, propose a theoretical hypothesis or verify a theoretical hypothesis. On the one hand, the academic community uses the experimental psychology method represented by the thinking aloud method, the computer aided method with keyboard log and eye movement tracking as the main content, and the neuroscience method represented by the application of instruments such as ERP and fMRI to carry out more systematic and in-depth research on the translation process. On the other hand, the academic community uses corpora as a research platform, based on the observation of large-scale corpora and relevant data statistics, to study the regular characteristics of translation products and translation functions. Due to these commonalities, there is a natural kinship between digital humanities research and empirical translation research, which leads to the integration of the two and forms a new research paradigm of translation research from the perspective of digital humanities. Therefore, the group of people engaged in translation work is trying to build a bridge between the traditional model and the digital network: on the one hand, it is to understand language, generate meaning, and interact with text; on the other hand, it is to recognize the particularity and importance of new media and digital technology.

3. From Digital Humanities to Digital Translation

From the perspective of humanistic computing, early machine translation can be regarded as one of the many attempts of humanistic computing. It is like a pair of twins with lexical text analysis (ZAMPOLLI, A, 1989). It is also a data processing system oriented toward text language. It is also full of hope after the emergence of computer technology, but its development path is quite different. In the field of machine translation, because of the deep linguistic background of researchers, they are obsessed with Chomsky's transformation and generation syntax. The perspective of viewing text is almost completely opposite to text analysis. In the era of limited computing power, they pursued a common language model and finally ushered in the famous ALPAC

report and fell silent for decades. Text analysis, on the other hand, has almost always followed the idea of word measurement, examining humanities issues from a quantitative perspective, which meets the development needs of the humanities and has also become the core content of humanities computing. On the one hand, the two have completely different perspectives on digital resources, with the former emphasizing rules and the latter emphasizing statistics. Humanistic computing is based on the rising road of text analysis technology, mapping the development direction of artificial intelligence dominated by statistics for more than half a century. Until today, the exploration of natural language processing with in-depth learning at the forefront still maintains this direction, which has always profoundly affected the exploration boundary of humanistic computing (digital humanities). On the other hand, their attitudes towards the relationship between computer technology and humanities research are completely opposite. The former strives to establish a completely new model based on computer theory and technology to replace traditional translation methods, while the latter always regards computer technology as a tool and assistant for humanities research. Unlike machine translation, which is dominated by machines, humanities always play a more important role in humanistic computing. Starting from humanistic issues rather than technical methods is an important reason why research in this field is ultimately referred to as humanistic computing rather than text or language analysis.

Since the 1960s, the development of computer technology has brought significant changes to the acquisition, analysis, integration, and display of humanistic knowledge. Traditional research methods focus on close reading, experience, and perception and are highly subjective. However, many humanities research problems cannot be solved by research methods of a single type, single medium, single discipline, or single institution, while digital technology research methods focus on quantification and data analysis, as well as the presentation of objective facts. Only by combining the advantages of the two can digital humanities research methods make research more objective, vivid, comprehensive, and scientific. Translation research has always been one of the important contents of humanities research, and its digital humanities path also demonstrates obvious advantages: 1) it can save translation researchers time and energy in processing materials and texts; 2) New perspectives and methods can be introduced to solve existing translation problems; 3) New thinking or tools can be used to propose new problems in the field of translation and attempt to solve them; 4) Digital humanistic thinking can be utilized for the construction of translation disciplines. Therefore, this new approach to translation research constitutes an interdisciplinary continuum between traditional humanities research and digital technology research methods (Figure 2), and any point of it is the integration of the two research methods, although digital research technology and its proportion are different for different research.

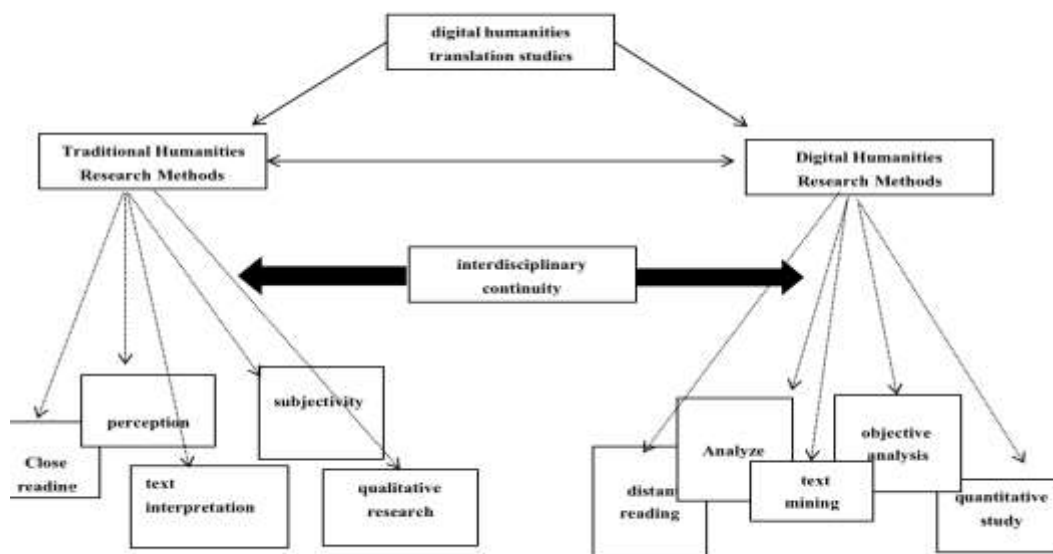


Figure 2. Interdisciplinary continuum of digital humanistic translation studies

At present, the existing translation technologies, such as corpus translation, machine translation, computer-aided translation, network translation, etc., have changed with each passing day. Narrowly speaking, any technology that utilizes computer technology to automatically translate one language into another can be called translation technology. In a broad sense, information technology that helps solve and alleviate obstacles in language services and cross-cultural activities is also translation technology. These technologies are widely used, rapidly popularized, and highly practical, with a strong trend of replacing all skill based language and translation teaching. Even the " translator's habits," which are considered a hot topic in current translation research, can extract all necessary information through text classification and word retrieval by examining the translator's behavior

and the appearance of the translated text from the perspective of the translator's habits. Therefore, we must also consider the problems we face based on the current translation situation.

4、 From Digital Translation to Translation Paradigm

Generally speaking, translation research from the perspective of digital humanities is based on the application of corpora and databases, conducting research on the regular characteristics of translation essence and phenomena, and exploring the causes of specific translation phenomena based on translation studies, linguistics, literature, and cultural theories. Translation research from the perspective of digital humanities has interdisciplinary research attributes. On the one hand, translation studies themselves are interdisciplinary studies, not only related to linguistics, literature, and cultural studies but also related to sociology, psychology, neuroscience, cognitive science, and computer science. On the other hand, digital humanities research not only involves the use of computer technology and information technology to build corpora and databases but also involves the description and data analysis of translation products and processes through the application of mathematical and statistical methods as well as text data mining technology. Therefore, it is closely related to disciplines such as computer science, information science, statistics, and mathematics. In fact, translation research from the perspective of digital humanities is problem oriented, breaking down barriers between different disciplines and achieving interdisciplinary collaborative cooperation at the basic data level.

In addition, translation studies from the perspective of digital humanities is still a new research paradigm. According to Kuhn, a paradigm refers to " a recognized model that a specific scientific community must follow to engage in scientific activities, including shared world views, basic theories, paradigms, methods, means, and standards, and everything related to scientific research " (Kuhn, 2012: 90). Translation studies from the perspective of digital humanities not only adopt research methods and research methods different from traditional translation studies, such as electronic means and statistical methods, but also have their own unique research fields, such as translation language feature research, and have gradually formed a relatively stable academic research group. Scholars engaged in research in this field all recognize the status of translation facts as cultural facts in the target language and have their own unique attributes, advocating the application of digital technology and quantitative research methods in translation research.

Throughout the development history of translation studies, translation studies have undergone four research paradigm shifts, namely the philology paradigm, the linguistics paradigm, the cultural studies paradigm, and the translation research paradigm from the perspective of digital humanities, including the corpus research paradigm. The philological paradigm, represented by Cicero, Jerome, Schleiermacher, and Tytler, focuses on the study of translation strategies and techniques, emphasizing that translation should faithfully reproduce the content of the original text. The linguistic paradigm, represented by Nida and Catford, advocates that as an important part of linguistic research, translation research should be based on Chomsky's transformational generative grammar, Saussure's structural linguistics, Halliday's systemic functional grammar, pragmatics, and cognitive linguistics. The linguistic paradigm focuses on describing how to achieve semantic equivalence between the translated text and the source language text at the lexical, syntactic, textual, and pragmatic levels, thus scientifically elucidating the essence and process of translation. The paradigm of cultural studies emphasizes that translation studies should focus on the production and reception of the translated text in the specific social history cultural context, explore how translation is manipulated by social and cultural factors, and how it affects the target language culture. The representative figures of this paradigm include Bassnet, Lefevere, Snell Hornby, Eve Zohar, and Tour.

Unlike these research paradigms, the translation research paradigm from the perspective of digital humanities not only focuses on internal research of translation but also focuses on external research of translation, emphasizing the analysis of language characteristics of translated texts from the inside out, from the outside to the inside, and exploring different external factors that have an impact on translation. This paradigm regards translation as a cultural or social phenomenon and believes that translation has its own unique attributes, which are not only subject to different social and cultural factors but also have a negative effect on social culture. In addition, this paradigm advocates the application of digital technology, emphasizing the research on internal or external issues related to translation based on the observation and quantitative analysis of a large number of translation corpora, bilingual corpus, or translation facts. This paradigm has three advantages. First, based on a large number of translation facts and data statistics, the language characteristics of the translated text and the regular characteristics of the translation process are summarized, which effectively overcomes the subjectivity and one-sidedness of traditional translation studies, and the research conclusions are relatively objective and scientific. Second, it not only pays attention to the analysis of common characteristics such as translation commonality and translation norms but also pays attention to the research of translation creativity and individual characteristics such as the translator's style. Third, it integrates internal translation studies and external translation studies, breaking through the barriers between internal translation studies and external translation studies. This paradigm, based on the description of language features in translated texts, repositions of translated texts, and translation practices into specific social and cultural

contexts, analyzes different factors related to translated texts or translation processes and reveals and summarizes the essence or regularity of translation.

5. Conclusion

To sum up, on the one hand, translation studies itself are interdisciplinary studies that are not only related to linguistics, literature, and cultural studies but also involve sociology, psychology, neuroscience, cognitive science, and computer science. On the other hand, digital humanities research not only involves the use of computer technology and information technology to build corpora and databases but also involves the description and data analysis of translation products and processes through the application of mathematical and statistical methods as well as text data mining technology. Therefore, it is closely related to disciplines such as computer science, information science, statistics, and mathematics. In fact, translation research from the perspective of digital humanities is problem-oriented, breaking down barriers between different disciplines and achieving interdisciplinary collaborative cooperation at the basic data level. Research in this field is based on the observation of a large amount of translated or bilingual corpus and the analysis of massive data. Through data mining, patterns, knowledge, and trends hidden in the data are discovered, revealing the laws of occurrence and development of things or phenomena. The conclusions are not obtained through thinking, observation, and insight but through the collection and automatic emergence of data, which has strong objectivity and scientificity. In this way, new translation paradigms have also emerged.

It is undeniable that in the face of increasingly digitized situations, translation researchers need to adapt to new research needs and organize, index, retrieve, and utilize digital materials to ensure the continuity, consistency, and efficiency of translation studies. Because pure digital charts are just a bunch of inanimate symbols, it depends on researchers to explain, describe, analyze, refine, and sublimate these rigid facts in order to play their due role. Through the integration of technology and humanistic methods, we should avoid the unhealthy trends of overhead thinking experience and text expression, such as “ emphasis on words, images, ideas, production, creation, and coding.” Only by using digital technology to actively absorb and embody humanistic values as research goals and methods can a substantive and effective link be formed between the two fields, and a new path of balanced and efficient translation studies be formed.

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