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8-10 ABRIL 2021

***Electronic Literature & AI:
Opportunities for teaching, creating
and researching***

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Digital Humanities & Big Data

In DH, the use of massive data is employed both for analysis and humanistic research, as well as for artistic creation.

Stages

- 1990s - 2009 computer as "**remediation machine**" (Sandra Álvaro, 2013). It pursues the conversion of analog culture to binary code, storage in databases, application of descriptors, tags and metadata.
- From 2010 onwards: from quantitative to qualitative, interpretative, generative. It begins to analyze data not only from the tradition stored in digital files, but also produced from metadata, tags, fingerprints and statistics. Data begin to be **mined and visualized**.

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Data analysis and research: some examples

TEKSTUM

App that studies, through artificial intelligence techniques applied to natural language processing, all the reviews, comments on social networks, articles, blog posts, etc. published about a book, identifying and analyzing keywords and detecting - based on the language used to make the comments - the emotional impact, the experience, that these readers have had with the book.

ADSO

Universidad de Alicante: this Project focuses on the distant analysis of the Castilian sonnet of the Golden Age, from its first Renaissance manifestations (Garcilaso de la Vega) to the last poems of the Baroque period (Sor Juana Inés de la Cruz). Computational methods are applied to detect their general recurrent features, both in semantic and metrical aspects.

POSTDATA

Directed by Elena González Blanco from the Innovation Laboratory of Digital Humanities UNED. It focuses on the analysis, classification and publication of poetry by applying XML-TEI encoding to seek standardization. Interoperability problems between different poetry collections are solved using semantic web technologies to link and publish literary datasets in a structured way in the linked data cloud.

Computational Creativity

The other avenue of impact of big data in the literature is computational creativity: Massive data are employed to train artificial intelligences that are able to create.

Computational creativity is a field of research focused mainly on the study and design of programs whose behavior can be considered creative.

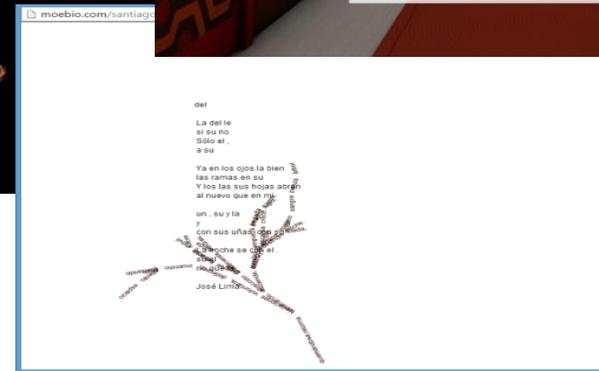
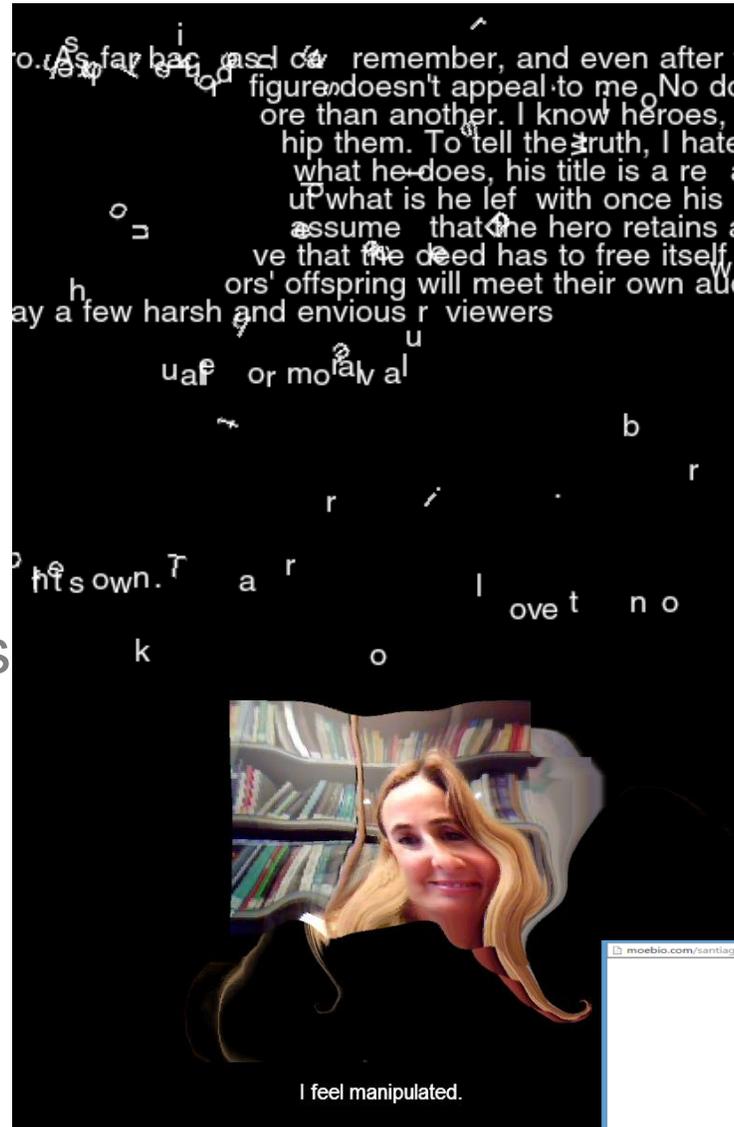
It is a multidisciplinary effort that draws on AI research, cognitive science, social anthropology, philosophy and the arts (López de Mántaras 2017).

DIGITAL LITERATURE- ELECTRONIC LITERATURE - E-LIT

Digital Literature \neq Digitalized Literature

New Technology \Rightarrow New features

- Hibridism, hypermedia
- Performativity
- Computer as an actor/autor/ cocreator



Summary table of the three generations of electronic literature proposed by Leonardo Flores (ELO 2018).

(Examples are mine)

Degree of impact on the public (from more restricted to massive outreach)

Accessibility of technological tools

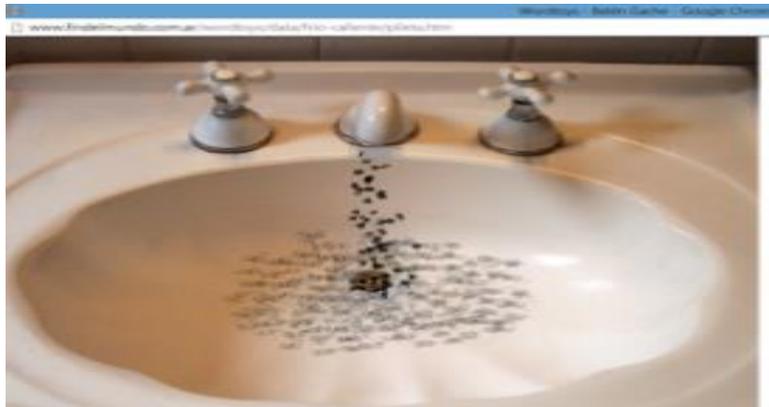
Ciberia

Classic Generation or First Generation	Contemporary or second generation	Third Generation
Till 1995	As from 1995	From 2005
Limited access to computers, small audience Pre-web, with preeminence of text, link-based, hypertextual, with many paradigms typical of printed text.	It is web-based and begins to incorporate multimedia and interactivity. Greater diffusion More accessible tools (Flash) Collaboration between artists and programmers	It uses social networks, apps, mass production and audiences: Twine games (interactive fictions, Instagram poetry, macro image memes (image with superimposed text) etc. Authors have greater digital skills, tools are more accessible
<i>Como el cielo los ojos</i> de Edith Checa (1995) <i>VeloCity</i> de Tina Escaja (2000)	<i>Bacterias argentinas</i> de Santiago Ortiz (2005) <i>Mitos muertos y suicidas</i> de Marla Jacarilla (2005)	<i>Azul fuerte</i> de Xavi Carrascosa (2010) <i>5000 palabras</i> de Isaías Herrero (2011) combines short stories, computer-generated poetry, collaborative poetry, audios, videos, etc.

Role of the computer in electronic literature's evolution

90'

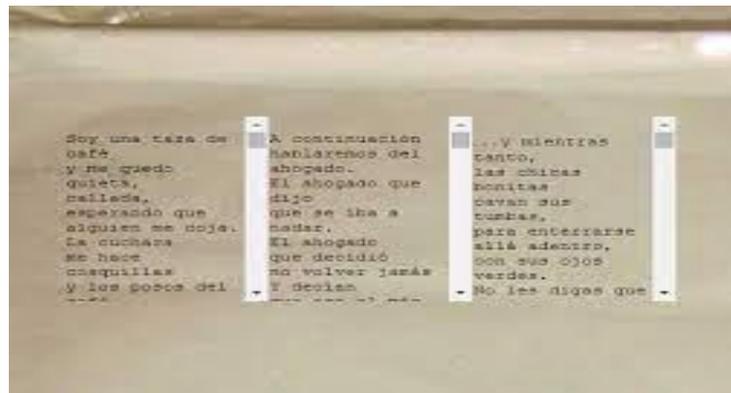
The computer is a mold in which to house literary works from our canon. Memory in deposit becomes memory in function (Assmann 2006), an active memory, the living memory of a society. Water poems or *Góngora wordtoys* by Belén Gache, the video poems by Óscar Martín Centeno *Homenaje a Miguel Hernández and Luis Rosales* or *Una contemporánea historia de Caldesa* by Feliz Remírez are examples of that period.



2000-10

It becomes a medium with specific properties that imprint its own characteristics: hypertextuality, fragmentarism, hybridization, ephemeral character, unfinished works, "co-creation", multimediality, etc.

Mitos muertos y suicidas, by Marla Jacarilla, *5000 palabras* by Isaías Herrero or *Bacterias Argentinas* by Santiago Ortiz.



2010-

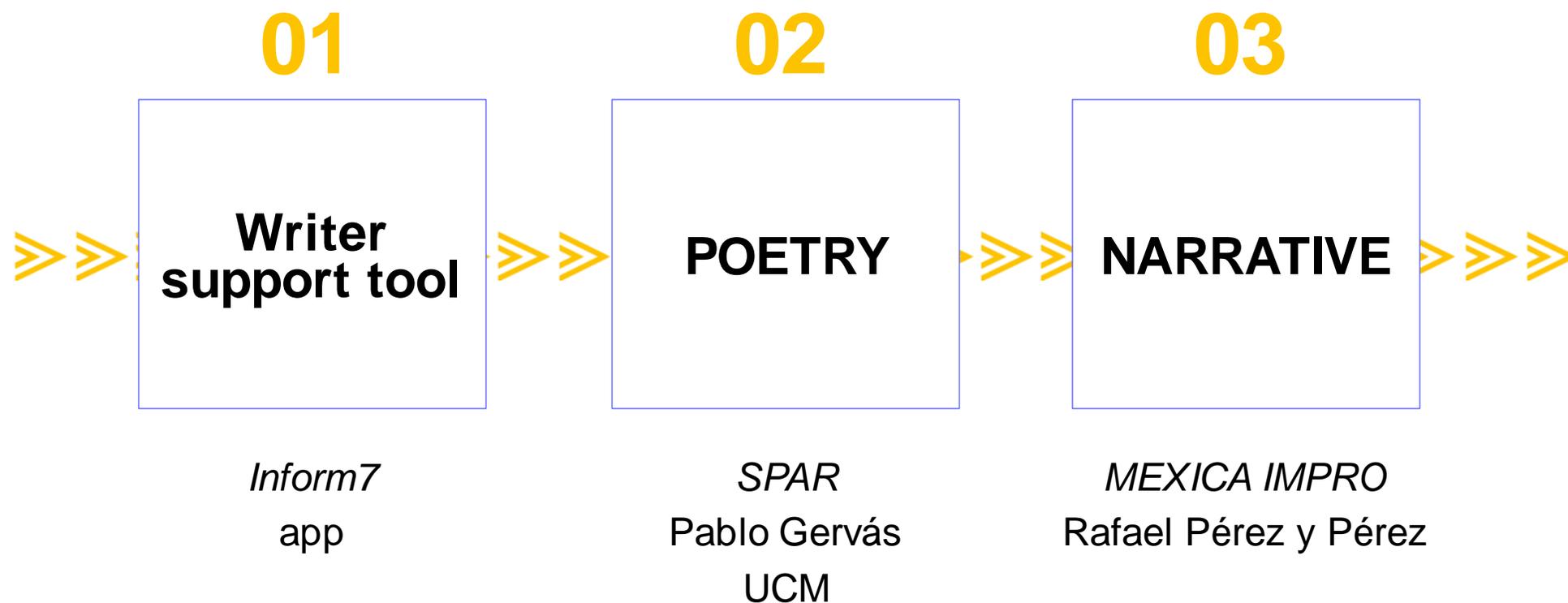
The software takes center stage and encourages the reader to be a co-creator. Interactive fiction (*Azul fuerte* by Xavi Carrascosa) or works with different reading itineraries (*Hotel Minotauro* by Doménico Chiappe, to name a few), would be examples. There are cases in which the computer is another character in the work. The example of *Matalareina* (2011) by the theatrical group Yoctobit is clarifying



Computational Creativity in Literature

- The computer is endowed with certain properties that we had hitherto considered exclusively human:
 - It is capable of generating original artistic products.
- It allows us to understand how human creativity works and to reproduce it in programs.
- The software acts as a creative collaborator of the writer and not as a mere tool.

Computational Creativity in Literature



INFORM7

Through this application, a writer who does not master the programming language can generate interactive fiction text interactive fiction texts.

There are several similar platforms such as Twine or Rerites.

ROBIN SLOAN

In 2018 he trained his software through a database of science fiction texts.

To augment the results he fed the program with works by some of his favorite authors and added the *Department of Fish and Wildlife* newsletter so that it would have variable elements.

It is a way of emulating what happens in human authors who, when writing, draw on their experiences, tastes, previous readings and the environment in which they live.

SPAR (Small Poem Automatic Rhymer)

Designed by Pablo Gervás, it is a program capable of generating metrically correct sonnets, with a certain thematic unity, and classic rhyme patterns.

From the reference corpus, it creates models, of which words usually appear next to each other and which ones rhyme with each other.

SPAR writes sonnets from his knowledge of a selection of novels:

Tarzan, Sandokan, The Jungle Book, Peter Pan, Alice in Wonderland, Prince and the Pauper and Sherlock Holmes.

- The user provides a word (title) and the system identifies related words.
- The program looks for connections to other words that may rhyme with these.
- It constructs phrases that it combines into verses ending in rhyming words.
- It organizes them according to preset stanzas.

Each stage lasts between one and three hours (depending on the length of the corpus).

It was presented in 2017 at the Festival Poetas Matadero in Madrid.

The compilation book at this link:

<http://nil.fdi.ucm.es/sites/default/files/Poemas%20a%20maquina.pdf> (Last visit: 21st January 2021).

MEXICA IMPRO

Designed by Rafael Pérez y Pérez (UAM).

Its program simulates the interaction of two agents that generate a creative dialogue to invent short stories about the Mexicas, the Mesoamerican people that founded Mexico-Tenochtitlan.

It is based on Sharples' (1999) theory of creative models: the writer during state E (Engagement) automatically associates ideas (inspiration), while in state R (Reflection) he analyzes, evaluates and modifies them.

The model

R

during reflection, the system breaks impasses, evaluates and, if necessary, modifies the material generated so far



MEXICA IMPRO

Mexica's crucial contribution is to model by trying to include the "culture" factor in its algorithms: it builds its own set of prior knowledge for each agent, thus emulating the influence of cultural memory on the story producer.

This model transposes the process of narrative improvisation performed by minstrels in oral literature, through algorithms, recreating a human capacity.

In addition, it tries to reproduce the influence of emotions in the development of the story through a Library of "emotional leagues".



CONCLUSIONS

- Massive use of data provides new educational tools:
Adaptive Learning
- Massive data analysis through AI is applied in HD in both
critique and creation.
- In the field of electronic literature:
The computer has ceased to be a mere container
medium for literary texts.
It imprints its properties on creations
It sets itself up as co-author or author
- Computational creativity as a model of transposition of
human creativity and source of knowledge by trying to
model human creative processes and translate them into
algorithms.

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Computer & literary phenomenon

In the digital environment, the human being (writer or reader) does not encode and decode the message directly, but a computer program must do so.

The digital text consists of a set of mathematical symbols that the program must "translate" into a human-readable form.

Digital texts have a double layer at the writing level: that of computer programming and that of the visible result on the interface.