WORKING DRAFT

# Non-Human Education, the "Wonders" of ChatGPT, and Synthetic Letters :

## Writing Machines and the Teaching of Writing in 21st Century College Writing Courses in the U.S.

The Future of Writing
May 1, 2023

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Who I Am /Where I Am Coming From

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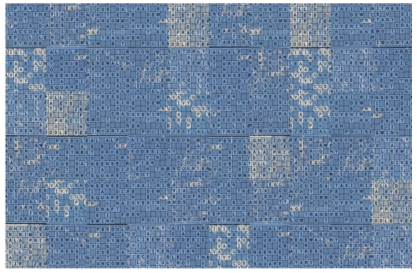
# Who I Am /Where I Am Coming From

Over the last fifteen years, I have been exploring what it means to write with and for and sometimes against machines by engaging with various manual and digital tools creatively and critically to better understand how they function in relation to the creation, recording, revision, and distribution of verbal language that originates from human minds. I have undertaken these projects in order to educate myself about the tools that I use on a daily basis in my own creative and research projects and to help others better understand how digital tools designed to "assist" or "facilitate" acts of human inscription function.

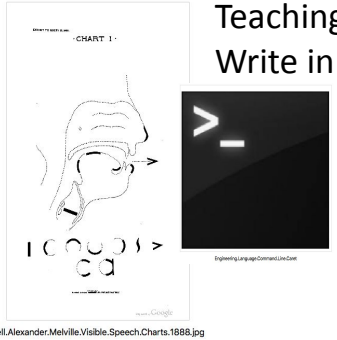
creative

CashWords, or Synthetic Language Processing (2008 - 2022)



critical

Engineering Language:
Teaching Machines to Read and Write in the U.S. (1869 - 1969)




Bell.Alexander.Melville.Visible.Speech.Charts.1888.jpg




pedagogic


Technology

A Reader for Writers

Johannah Rodgers

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ISBN: 9780199340736

384 pages
Paperback
5-1/2 x 8-1/4 inches

In Stock

**Retail Price to Students: $37.95**

# Overview: Non-Human Education, the "Wonders" of ChatGPT, and Synthetic Letters

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1. There are no “simple answers” to the questions of what writing educators are to do in response to networked digital electronic LLMs
2. They have been a long time coming
3. They result in part from the “literacy” education of machines
4. As a result, writing educators are uniquely qualified to respond to networked digital electronic LLMs, which are, and have been for some time, part of the rhetorical context of the FYW course and communications studies

There are no simple answers to the questions of what writing educators are to do with networked digital automated synthetic text processing tools like GPT3 and the currently free, though eventually fee-based, web interfaces to them, such as ChatGPT. They have been a long time coming and, while I would never dare to say they were an inevitability, left solely to the economics of contemporary technics, i.e, increasing CPU and storage performance at an ever decreasing cost, size and accessibility of digitized data sets, the current and growing inventory of virtually real time streaming human readable text, and machine learning tools; the scale of the historic investment of public monies in the research and development of ICTs; and current public expenditures on information technologies, the existence of computationally sophisticated large language models used in the generation of human readable text is not new. It is, however, per the 100 million users of ChatGPT, news.

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# Some Possible Responses to Networked Electronic LLMs by FYW instructors:

Regarding the not so simple answers to what writing educators are to to do with GPT3, these include:

1/ teach to it and how it operates from a technical standpoint, delving into the fifty to one hundred years of natural language processing and computational linguistics that inform it;

2/ use it and study it in comparative exercises to explore

a/ the uniquely human aspects of language production in the various stages of a human writing process;

b/ what need no longer be taught as part of the FYW course

3/ use it creatively to explore how it is and is not “human like” by writing with it, preferably by hand so it cannot understand you…at least not until GPT4 is publicly available

4/ Consider what systems of notation other than the latin alphabet might become part of brainstorming and drafting processes in the FYW course?

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# Generative Networked Electronic  LLMs Further Complicate the Already Complicated Rhetorical Context of the FYW Course: Could These New Complications Lead to a Renewed Focus on and Exploration of Embodied Human Inscription Practices and Their Meanings in FYW Courses?

This workshop is composed of three parts:

1/ a brief introduction to some of the many socio-cultural, economic,, educational, financial, and historical issues related to automated text processing engines;

2/ some creative and critical responses to writing with, for, and sometimes against machines;

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# A Comparative Literature Major Who Thought She Had Escaped Silicon Valley in the 1990s Finds Herself Back in It "Virtually" as the Founding Director of a FYW Program in Public Higher Ed in the 2010s

**Professional Affiliations**

Member, Critical Carbon Computing Collective (2022-present)

Independent researcher/writer/artist/educator/concerned citizen (2018 - present)

Founding Director FYW Program, The New York City College of Technology / The City University of New York (2008 - 2018)

College Writing Instructor at The City University of New York
(1998 - 2018: ten years contingent faculty / ten years tenure track/tenured faculty)

Analyst, R.B.Webber & Co., the first management consulting firm in Silicon Valley
(1992 - 2002)

**Education**

Rhetoric and Composition Ph.D. (2007)
Creative Writing MFA (1998)
Comparative Literature ABD MA (1991)
Comparative Literature, Philosophy, Linguistics B.A. (1990)

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# How Did Automated Electronic Digital Calculators Learn How to “Read” and “Write”?

Engineering Language: Teaching Machines to Read and Write in the U.S. 1869 - 1969

They were taught, a verb I deploy in this project in a non-metaphorical sense because the manner in which non-human networked digital electronic devices have been endowed with the ability to manipulate latin alphabetic characters in a way that emulates human communication and sign making processes has involved a great deal of education.

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Key Questions

1/ How Might Standard Written English as a Dialect Inform Assumptions about Verbal Language Embedded in Text Processing Systems?

2/ How can we understand the ways that literacy instruction and its relationships with commercial technologies of representation and reproduction, government funding priorities (education +/ v. military), and correctness inform where we find ourselves re: literacy practices and educational priorities today?

Draft Hypotheses

1/ That verbal language, like every natural resource, has been productized and commodified and continues to be so in new and unique ways.

2/ Sometime in the mid-20th century as much public funding and educational resources were dedicated to teaching machines to read and write as to teaching humans to read and write. This investment, which stemmed largely from the investment of government in initiatives supporting the mid-century military industrial complex is now part of the 21st c. educational industrial complex.

3/ We are at yet another inflection point in the long history of machine literacy education in the U.S. What are at issue now are the investment of public monies for the public interest and for global environmental sustainability. Is public education being in some ways privatized via the increasing educational IT spending on for profit technology providers? What should be the functions of public literacy education in creating sustainable worlds for humans and other biological organisms?

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# Engineering Language:
# Teaching Machines to Read and Write in the U.S. (1869 – 1969)

Seeking to understand how technologies of inscription, reproduction, and communication are related to definitions of verbal language and public literacy education policies and pedagogies in the U.S., this project documents and reflects on some key moments in a proposed history of instrumentalist conceptions of human communication practices.

Create a digital archive of key documents in a proposed history of instrumentalist conceptions of human communication practices

Some Questions Guiding This Research:

How does verbal language become a computational "problem"?

Why does verbal language become a computational "problem"?

What are the implications of the automation of latin alphabetic text generation for public literacy education, society, human communication and learning processes, etc.??

Create artifacts reflecting on this archive:

"Babbage Redacted, or How Do 'We' Assess the Value of Words?"

"Remediating Alphabetic Language, or Was AGB Raised as a Telephone?: HMB's Visible Speech and the Conception and Use of Humans as Writing Instruments"

"Before the Byte, There Was the Word: von Neumann's Word Choice"

">_: Unix as Digital Shorthand, or How the Human 'Voice' Got Written Into the Machine"

# Mapping Socio-Technical, Economic and Educational Feedback Loops (1867 -2023)

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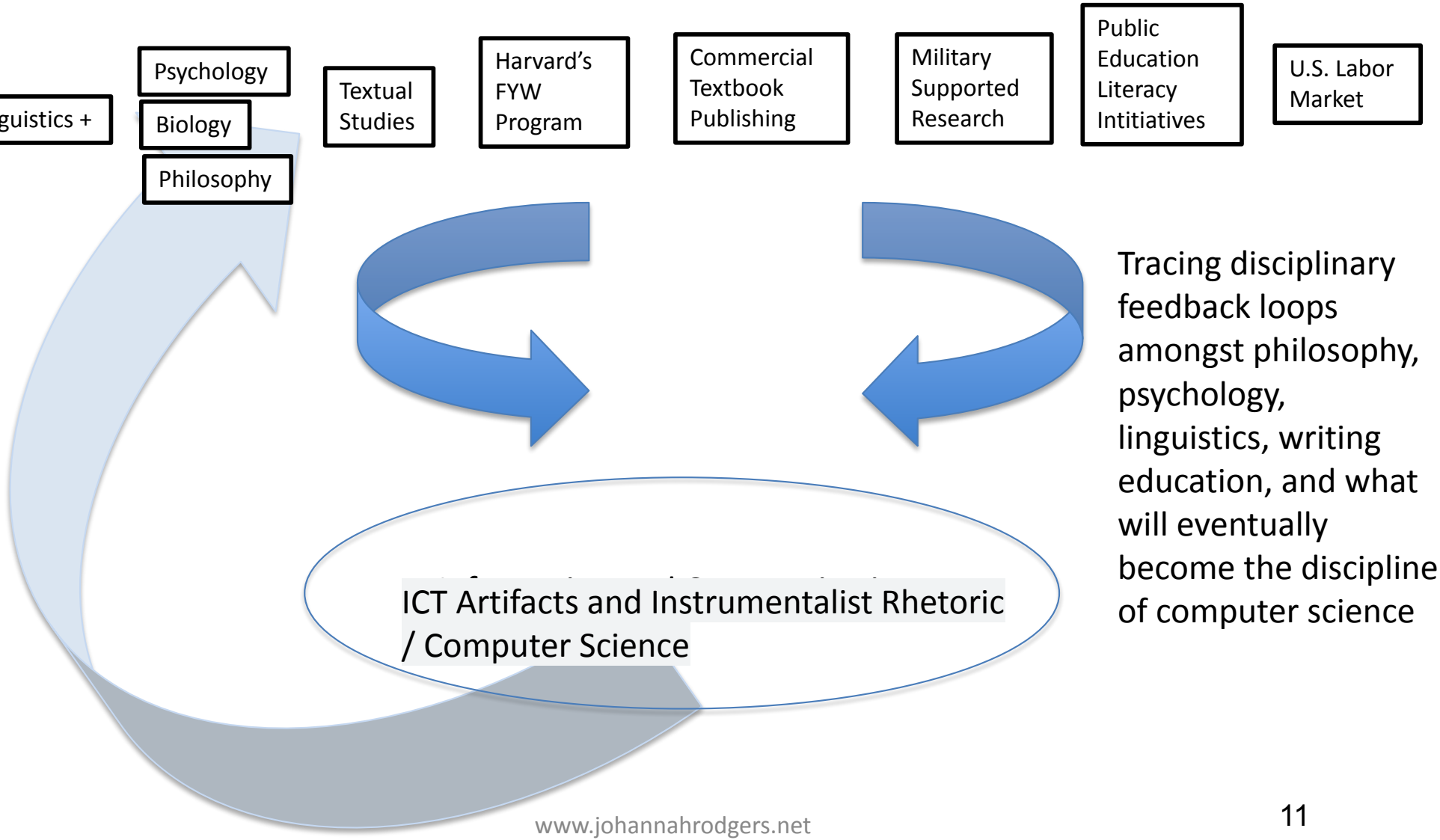


Tracing disciplinary feedback loops amongst philosophy, psychology, linguistics, writing education, and what will eventually become the discipline of computer science

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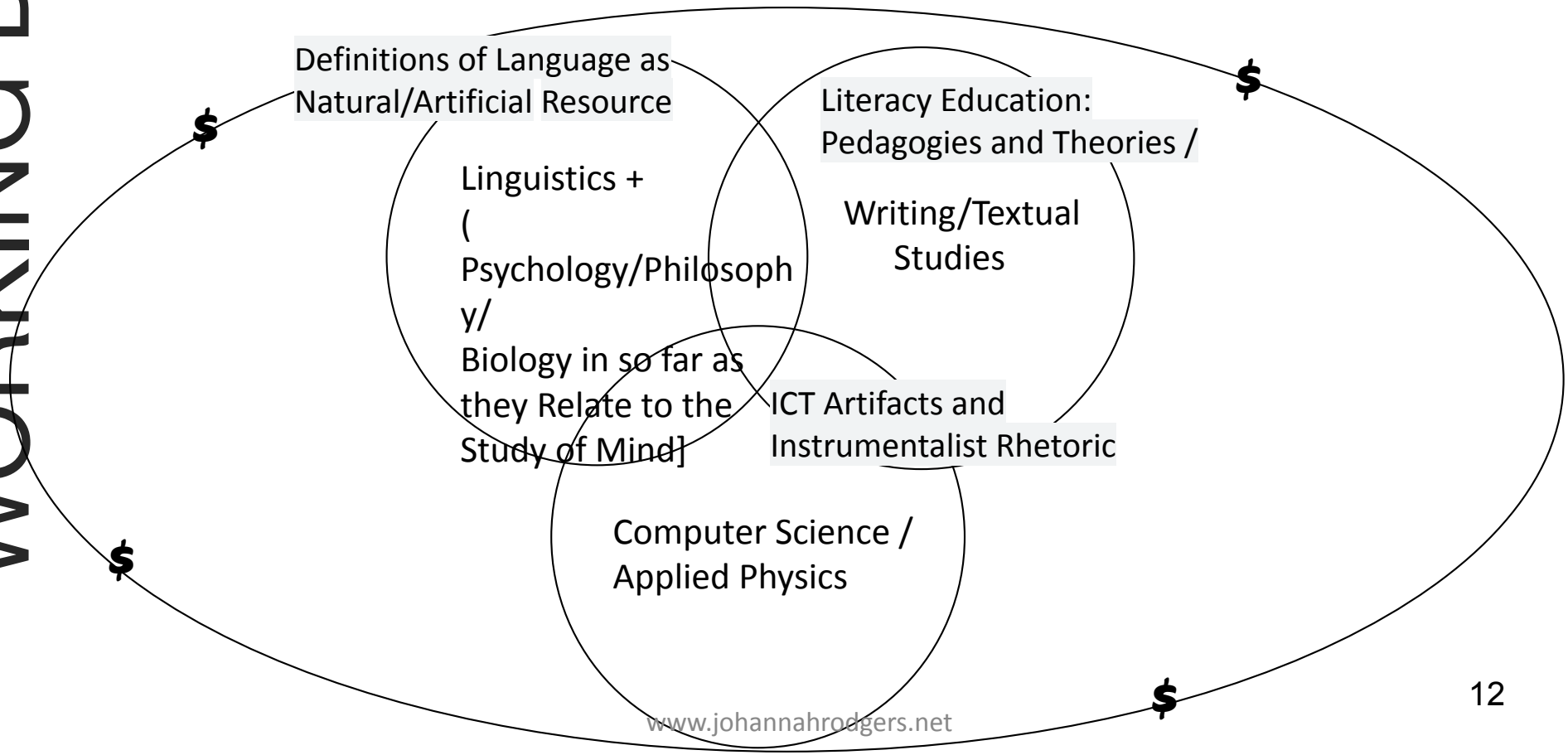
# Where and How do Definitions of Language, Literacy Education, and ICTs Intersect? How do they Inform One Another? Where and How do they NOT Inform One Another? How Do Money Flows From Government and Private Sources Shape Their Relations and/or Non-Relations?



# I am Interested in Locating Important Inflection Points in the Histories of Instrumentalist Conceptions of Human Communication Practices

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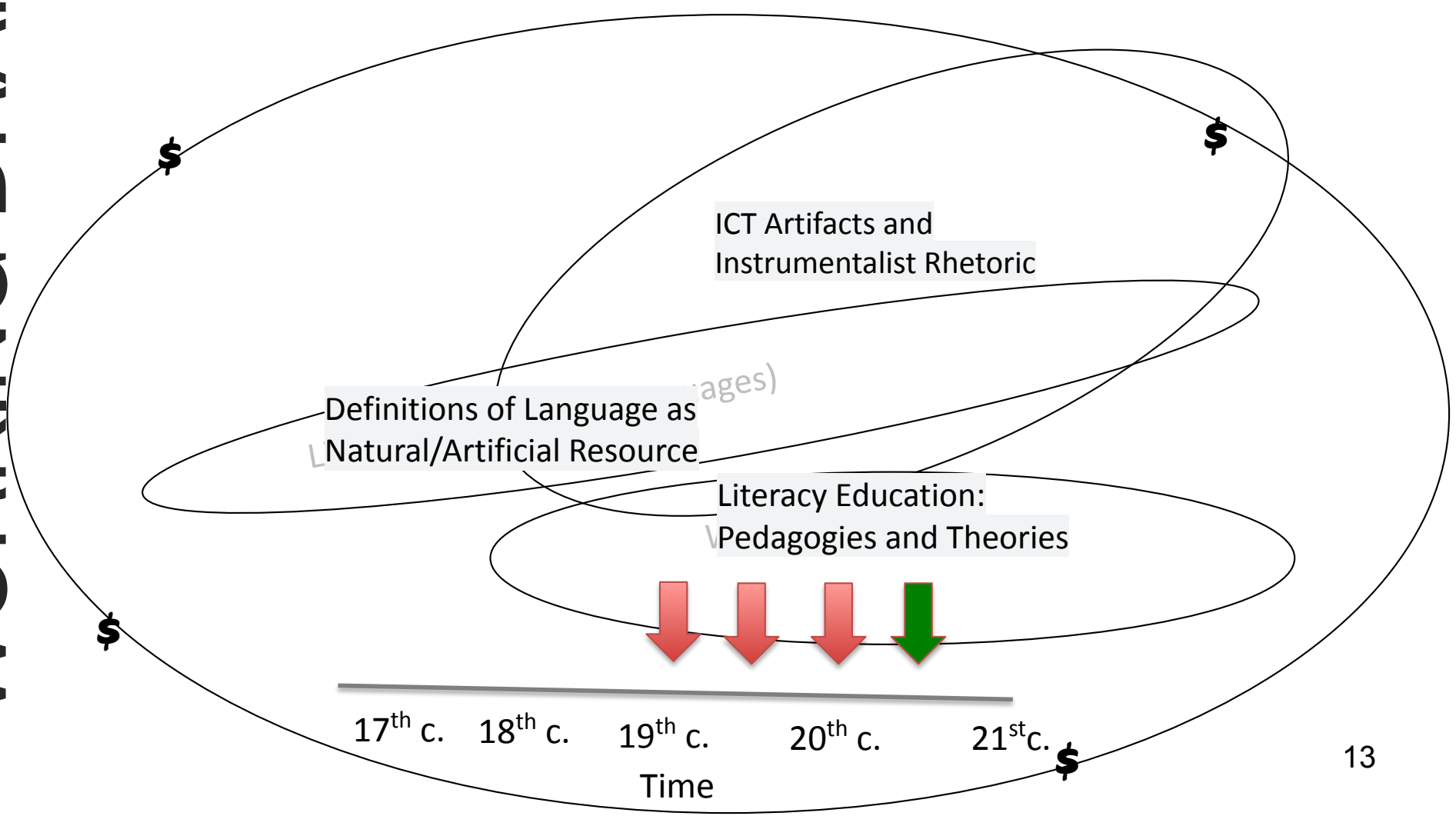

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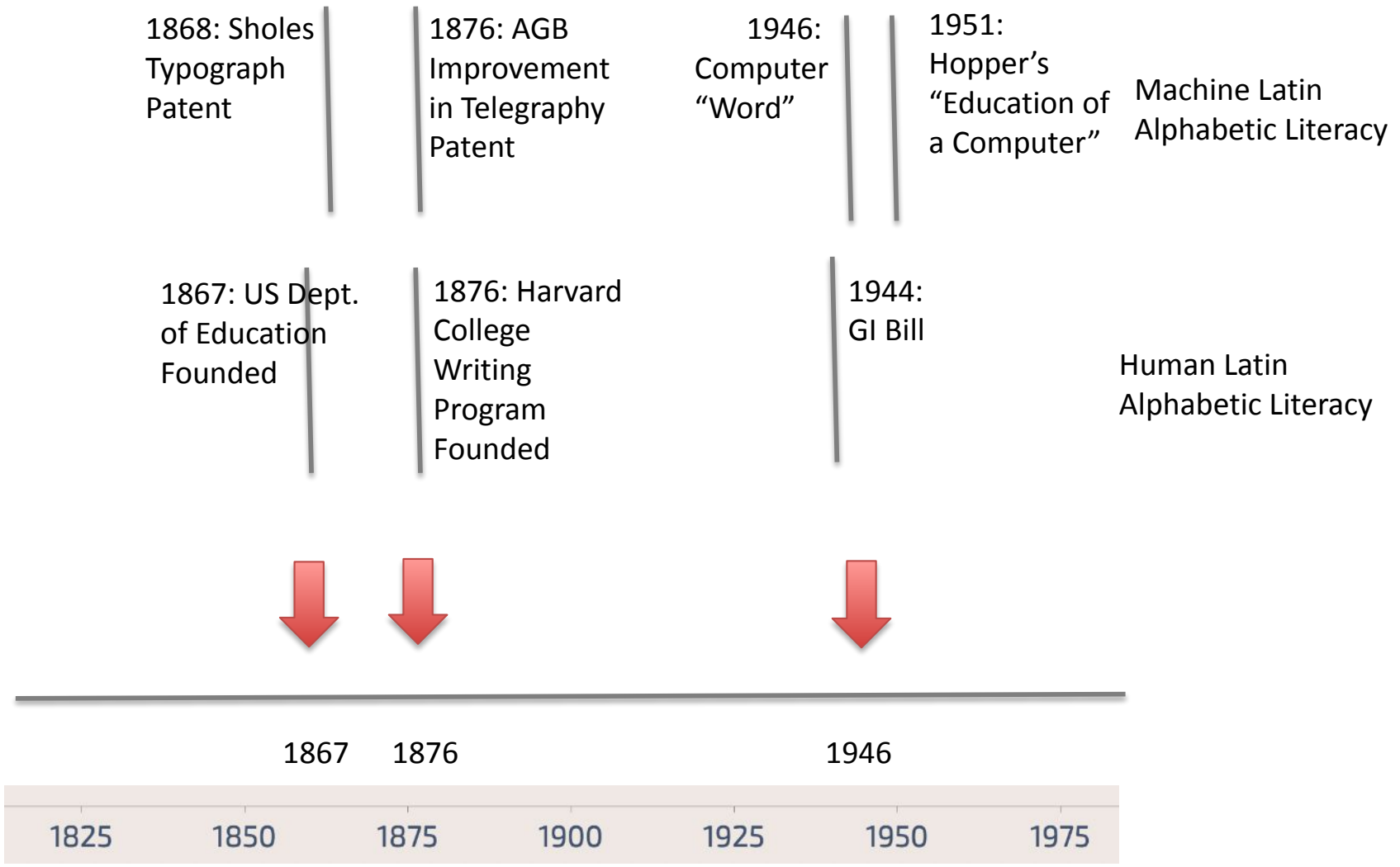
# Some Key Inflection Points in 19th and 20th c. Human and Machine Alphabetic Literacy in the U.S.

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# When and How Did Machines Enter the Rhetorical Context of the FYW Course?

computation = communication + calculation

Questions:

When, how, and why does human cognition begin to be represented as calculation?

When, how, and why does verbal communication begin to be defined from a machine perspective?

When, how, and why does verbal language become a statistical problem?

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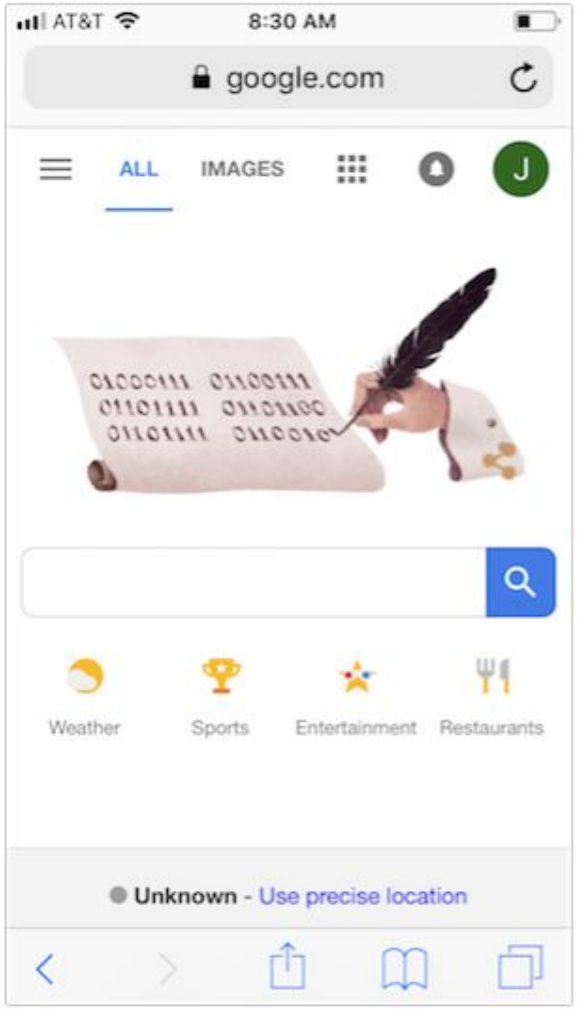
Q: How did digital electronic networked electronic calculating machines learn to “read” and “write” latin alphabetic characters?




SWE.as.Code.Leibniz.Google.Doodle.July.1.2018.PNG

A: Investment in machine “literacy” education + the disciplines that support it

A: Fungibility of systems of notation: who has a say in this?

A: Metaphors + Figurative Language in Design and Planning and Marketing of Computing Machines

A: “Arithmetization” of SWE

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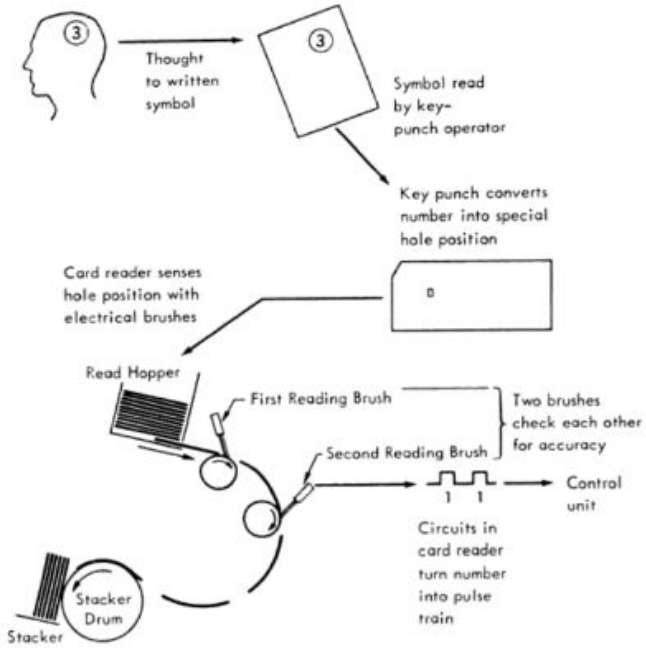
Q: Why does verbal language become a computational problem?




*How a number is translated from human thought to the train of electrical pulses that the computer can use in calculations. Note the many different translations from one abstraction to another.*

Corliss, "Computer," Atomic Energy Commission, 1966

A: Privileging Machine Affordances Over Human Affordances, or Looking at What Is NOT in this "Picture" and how verbal language functions figuratively in creating a socio-cultural utility / necessity for technical affordances

# Reading and Writing With and For and (More Recently) Against Machines: Creative Documentary Responses

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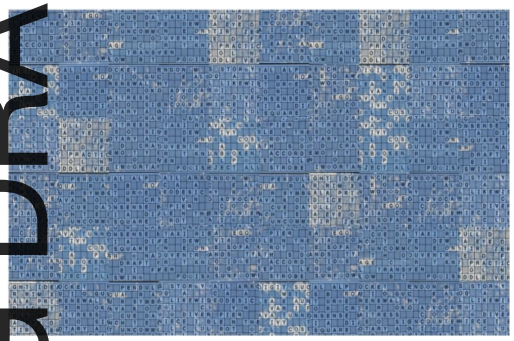
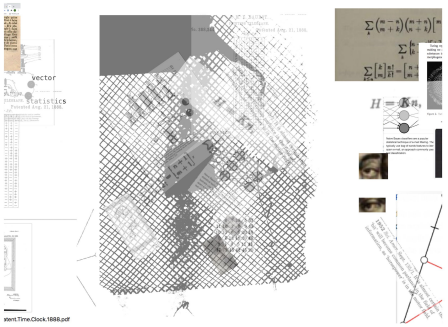
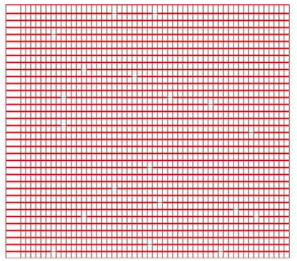
## CashWords, or Synthetic Language Processing (2008 - 2022)



## Pins, Memorylessness, and Bags of Words: Visualizing "AI" and Its Histories (2021)



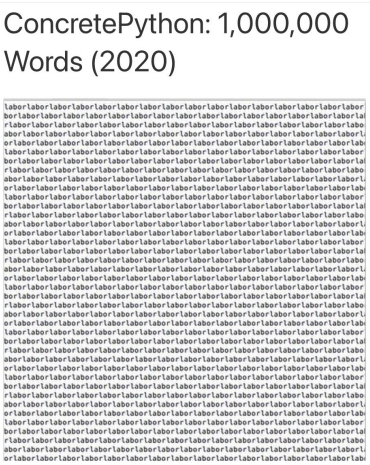
## What My Computer "Sees" (2019)



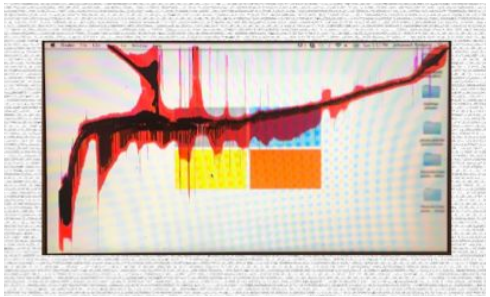
embroidery (10 x 10 in limited edition ink jet print)

What My Computer Sees "embroidery" jpg to binary 000003 of 003215
(10 x 10 unique ink jet print)

## ConcretePython: One Million Words (2020)




## A New Take on Talking Pictures, or 612 of 286,416 Assembly Code Instructions Describing This Image (2019)



## Can Machines Read? A QR Code Alphabet (2018)

# Reading and Writing With and For and (More Recently) Against Machines: Creative and Critical Engagements (2010 – 2019)

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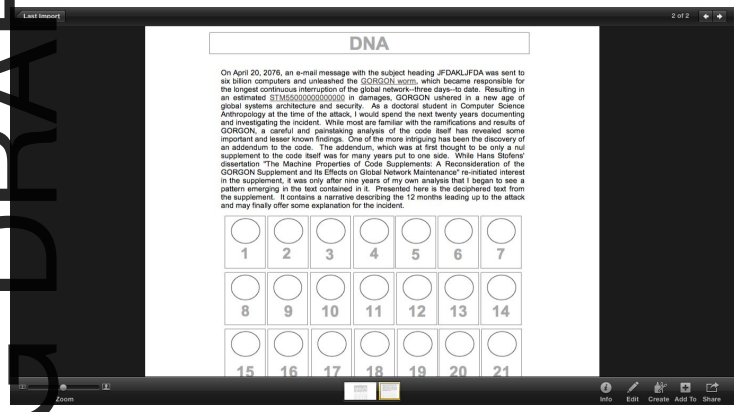
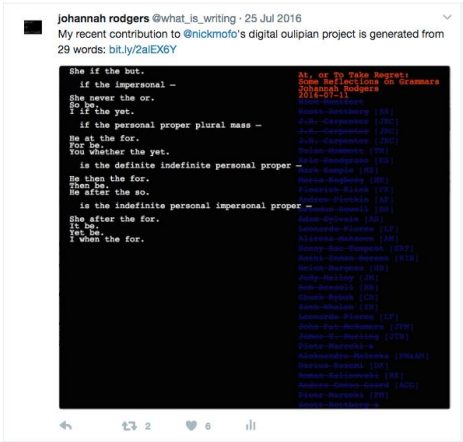
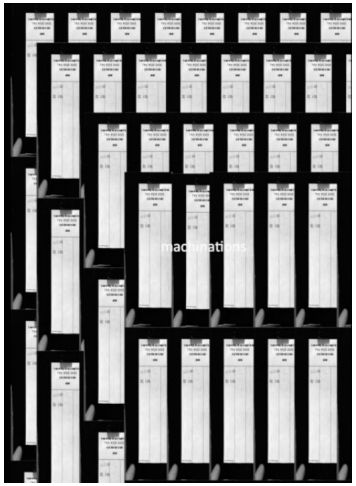
## DNA, A Networked Digital Fiction + Literacies Project (2010)



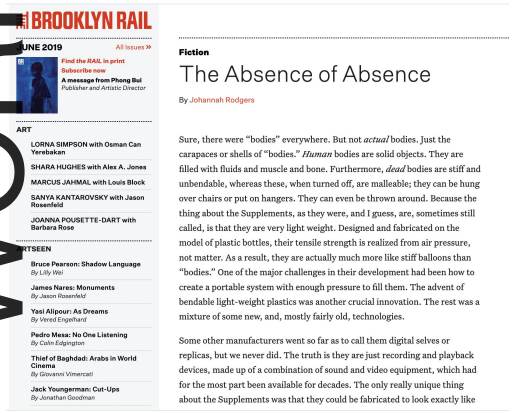

## At, Or to Take Regret: Some Reflections on Grammars (2016)




## Machinations (2017)




## The Absence of Absence (2019)




## Word Drawings (2004 - present)

## Wealth Begins With Human Need: Remediating Ch. 1 of Marx's *Capital* (2015)

www.johannahrodgers.net

# Appendix

How did Networked Electronic Generative LLMs "learn" to read and write Standard Written English?

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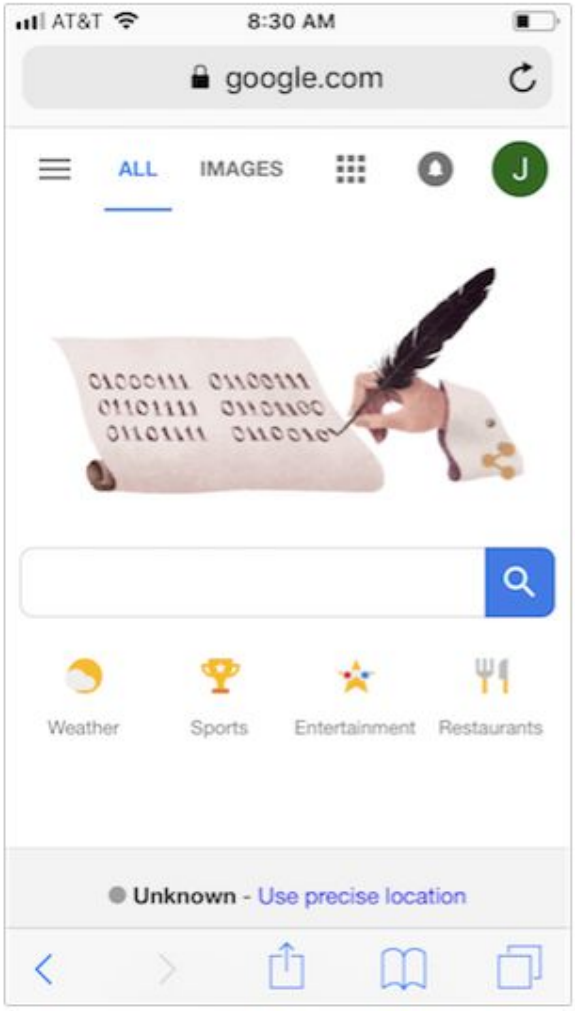
Networked Generative Electronic LLMs = statistics/machine learning tools + high speed processors + enormous data sets of human and non-human generated latin alphabetic text

An estimated “3.4 trillion words, roughly the equivalent to the entire contents of the Library of Congress” are posted globally to the web each day (Clive Thompson, “Write from the Start” (2015)).

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Mapping the Universe of Grammars Across Disciplines

Writing Studies

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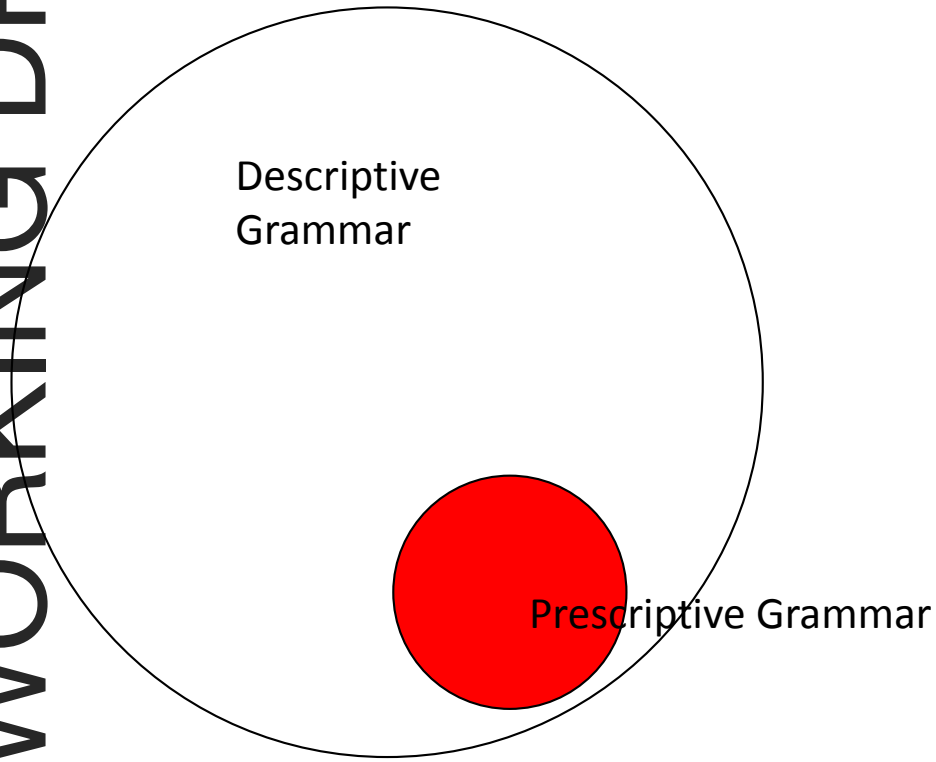
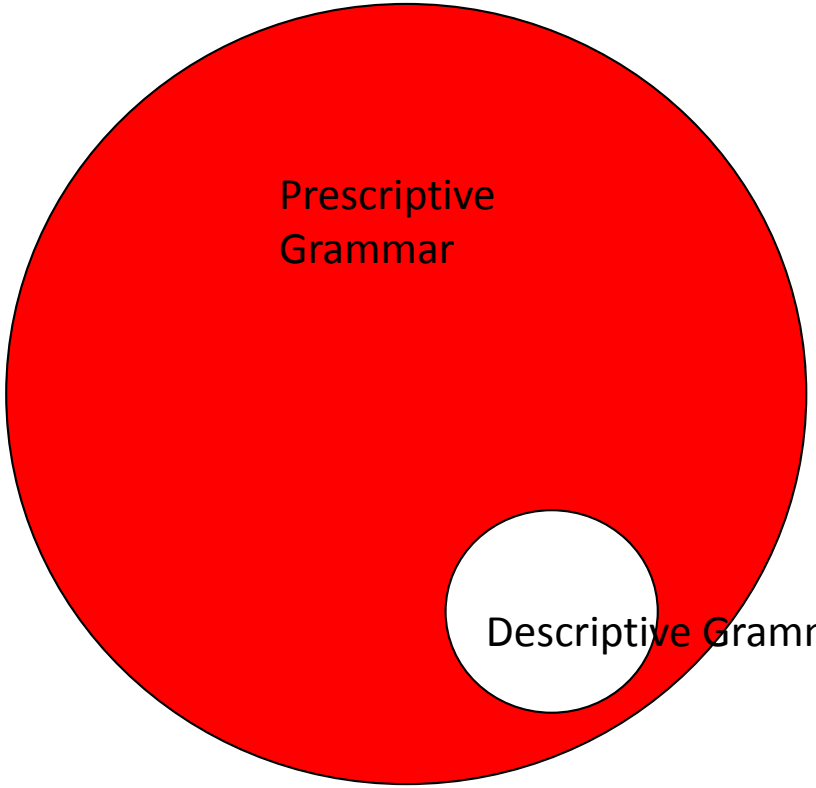
In Theory




In Practice



# There Is Nothing "Natural" About Natural Language Processing

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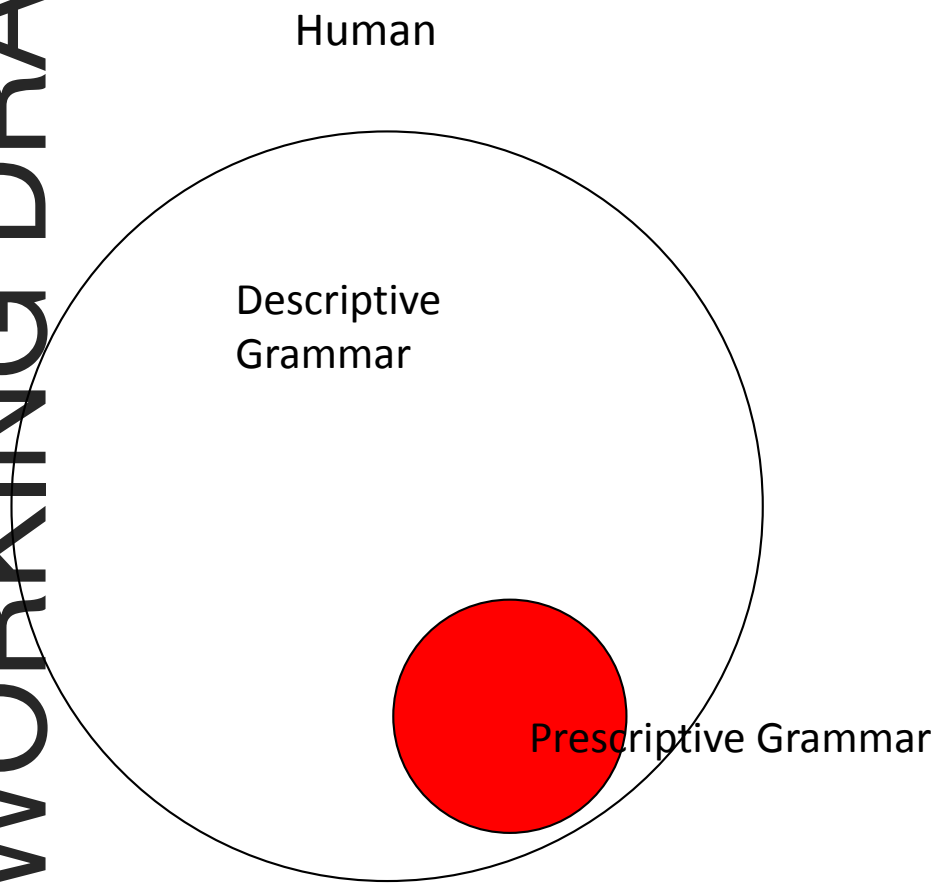


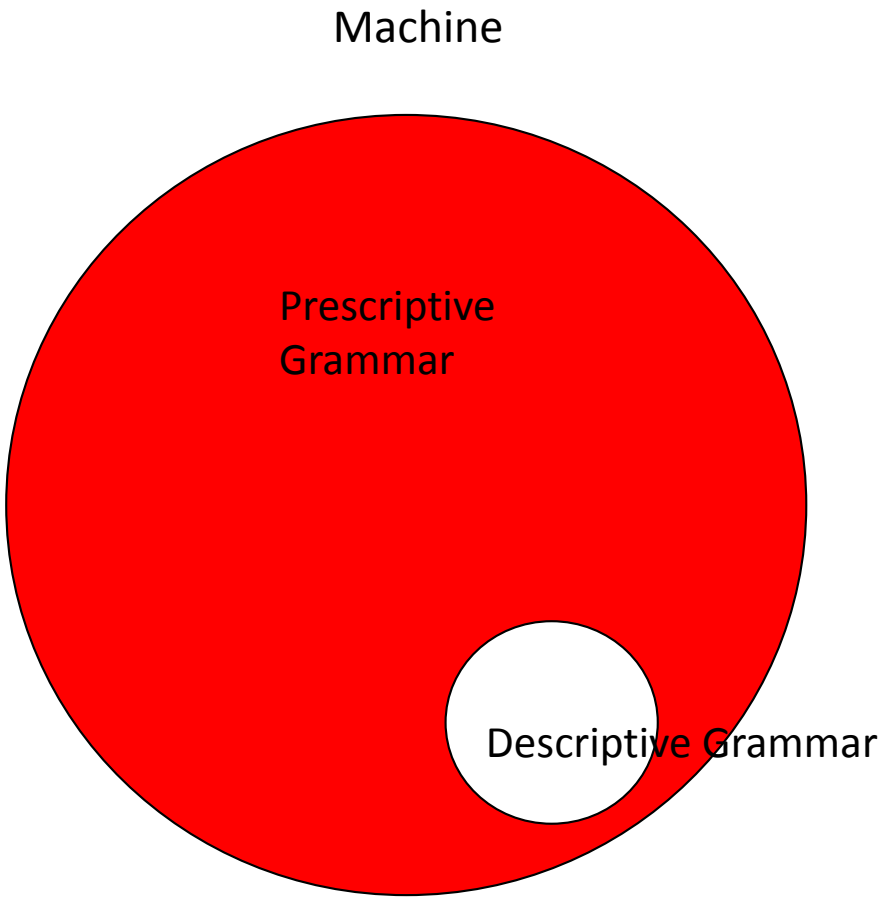

# There Is Nothing "Natural" About Natural Language Processing

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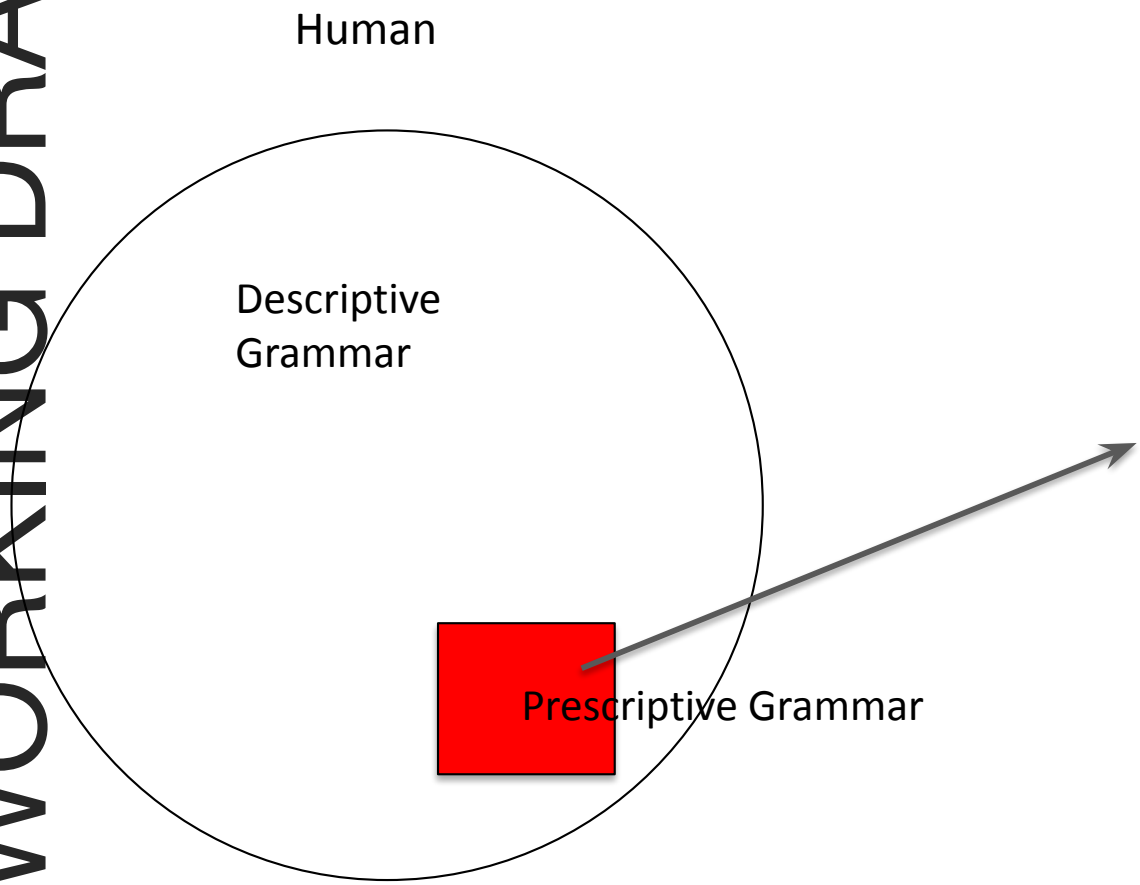
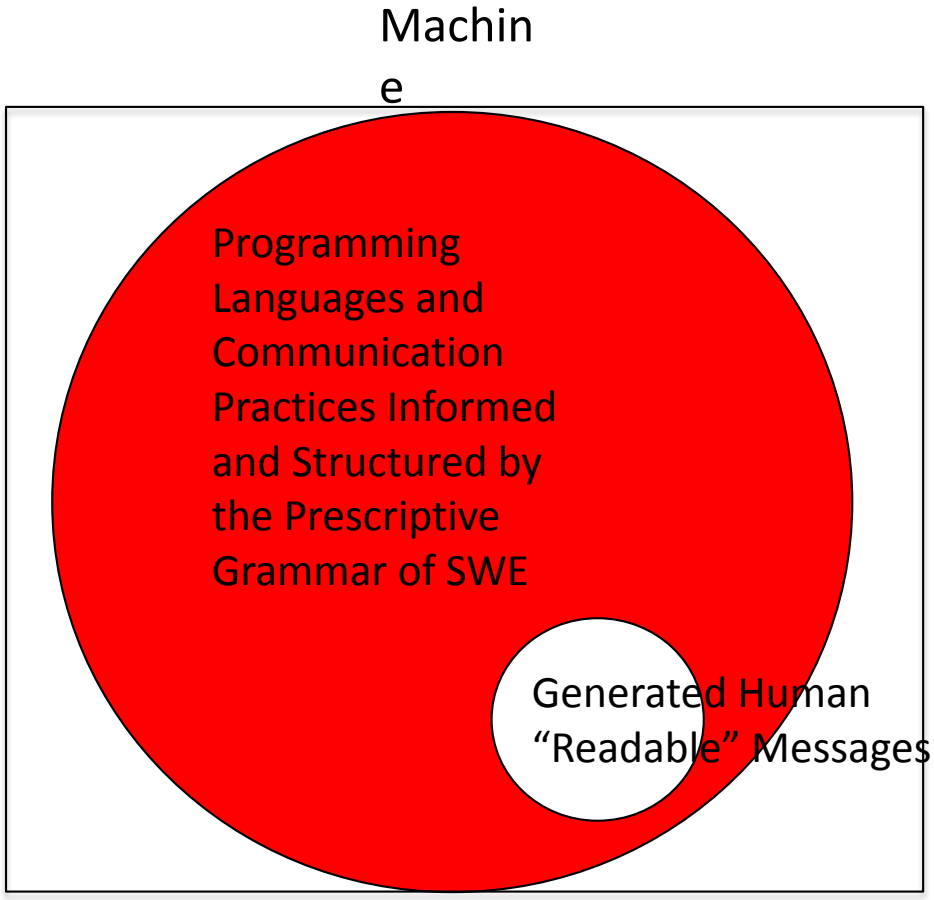



Machine

Prescriptive Grammar of Machine Coding Informed by SWE Prescriptive Grammar

Automates Writing of SWE and Generates Simulated Descriptive Grammar expressed via NLP tools

What is spoken to a consumer in NLP is written. It is the proper syntax of Python code that presents spoken options that are not actually options. They are check boxes. Any and all attempts to use spoken verbal language to contest or alter the options presented result in non-transactions.



# Key Questions

1. What constitute best practices in writing instruction in light of the rapidly changing technologies being used for the creation, distribution, and reception of acts of human and machine communication?

2. How might issues related to fair labor practices and living wages for both students and faculty members be involved in the socio-cultural and technical changes occurring in literacy education policies and practices?

3. What can writing instructors do to more accurately represent and make visible the labor involved with teaching writing, the ongoing value(s) of literacy education, and "what it means to be able to write" to college administrators and faculty outside of English Departments? (2017)

Why, from 1943 to 1946, did von Neumann, et al, begin to name the basic transactional and storage unit of electronic digital calculating machines a “word”?

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## Why Did They Call It a Word? [The “Rhetorical” Perspective]

1. Explain the complex memory functions in a basic though necessarily incomplete manner* to a wider audience
2. Emphasize that this data unit could not be broken up if it were to function as part of the human-machine and machine-machine communication processes
3. Address its dual functions and identities as sometimes an instruction (command) and sometimes a representation and expression of a machine readable sign (data unit)

## Why Did They Call It a Word? [The Technical/Conceptual Perspective]

Computation = communication + calculation

The automation of computation is enabled in part by:

1. Introduction and incorporation of tools and techniques of Cryptanalysis into automated calculating systems
2. Shift away from human readable systems of numeration, i.e., decimal to binary, and media, i.e., punch cards to electro-magnetic wires
3. Creation of new types of memory storage
4. Introduction of telegraphic systems and frameworks, which will manipulate binary pulses as “words” with syntactic and semantic characteristics

*it is emphasized again and again in this document that this machine cannot be adequately represented by the use of alphabetic language even according to the guidelines of standard written english; diagrams, however, appended at the end of the typescript may offer a more complete representation (cf. Babbage’s Shorthand)