

Media Design Seminar: making sense of algorithms

nicolas nova

MEDIA DESIGN RESEARCH SEMINAR

Course objectives

- Introduction to the investigation of algorithms and machine learning
- Sharing with you relevant recent references in this domain
- A case study for a (small) research project based on interviews

MEDIA DESIGN RESEARCH SEMINAR

What do I mean by “ethnographic research”?

- Ethnography is the approach used by anthropologists, sociologists (and designers!) to study cultural phenomena based on observing and interacting with people.
- It's one of the many approaches used in user experience research, which aims at studying target users in context in order to feed design work (find inspiration, bringing life and direction, uncover problems and design opportunities).

MEDIA DESIGN RESEARCH SEMINAR

Summary

What we will do in this seminar: each of you will conduct a (small) research project focused on how users of digital technologies interpret one specific algorithm (e.g. facebook post order, spotify suggestions, targeted ads on instagram). Using recorded interviews with three users of such services, you will have to produce an audio file in the form of a 4-5 minutes podcast episode that summarizes your findings (interview excerpts + your comments/analysis).

Why is that important to do this, as designers? Learning this kind of interviewing skills is important to help you design things, by understanding people's perspective.

MAKING SENSE OF ALGORITHMS

“Algorithms”



A Computer Glossary (Eames)

To define characteristics so that the computer can classify them accurately, (or in fact use a computer to solve any problem) one needs an

ALGORITHM

A fixed step by step procedure designed to lead to the solution of a problem.

Almost any problem can be solved that can be adequately stated.



It is this spirit of the exact recipe, the precisely defined procedure, that permeates the work of people in the world of problem structuring; that makes possible the world of the electronic digital computer.

MAKING SENSE OF ALGORITHMS

“Algorithms”: both a theoretical concept and an (everyday) notion

The term algorithm is commonly used nowadays for the set of rules a machine (and especially a computer) follows to achieve a particular goal.

It does not always apply to computer-mediated activity, however. The term may as accurately be used of the steps followed in making a pizza or solving a Rubik’s Cube as for computer-powered data analysis.

MAKING SENSE OF ALGORITHMS

“Algorithms”

Bubble Sort

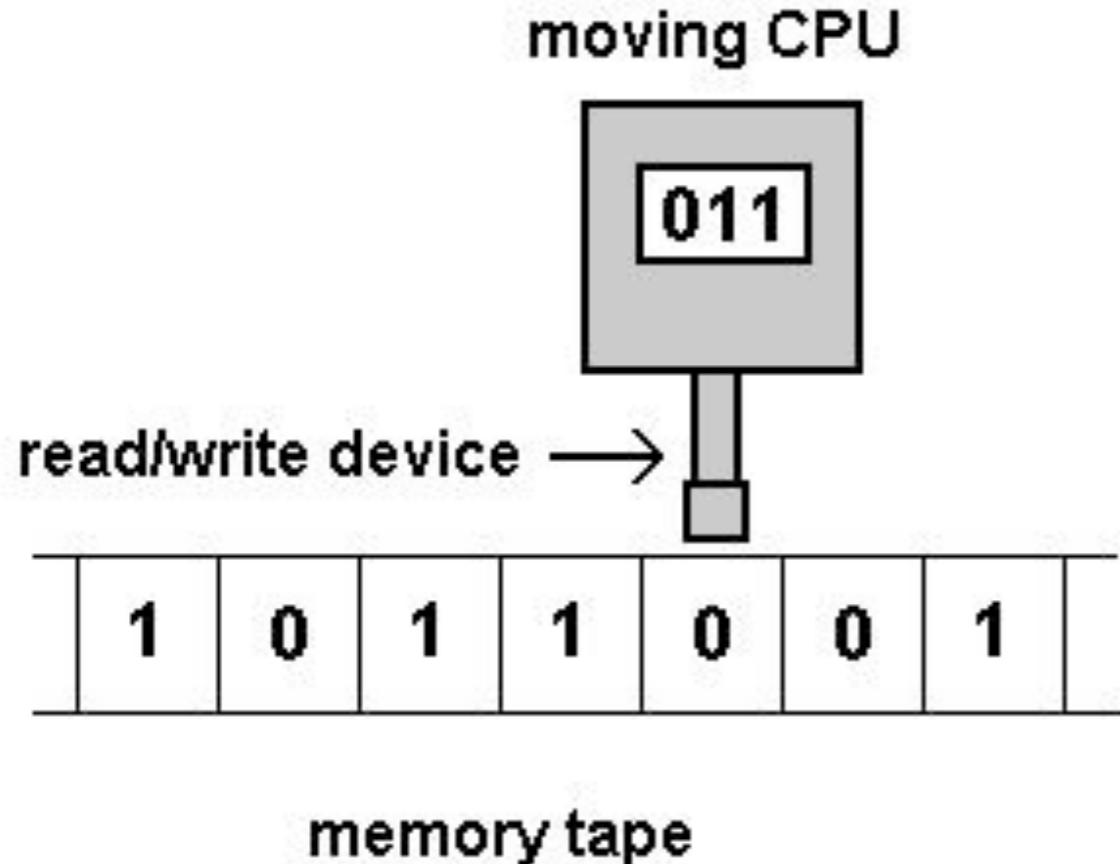


Bubble Sort: compare two elements at time and swap if the 2nd element is larger than the first.

Bubble sort is considered the simplest sorting algorithm. It goes through an entire array and compares each neighboring number. It then swaps the numbers and keeps doing this until the list is in ascending order.

MAKING SENSE OF ALGORITHMS

Information theory



1936: modèle théorique du calcul informatique

VOL. LIX. No. 236.]

[October, 1950

M I N D
A QUARTERLY REVIEW
OF
PSYCHOLOGY AND PHILOSOPHY

I.—COMPUTING MACHINERY AND
INTELLIGENCE

By A. M. TURING

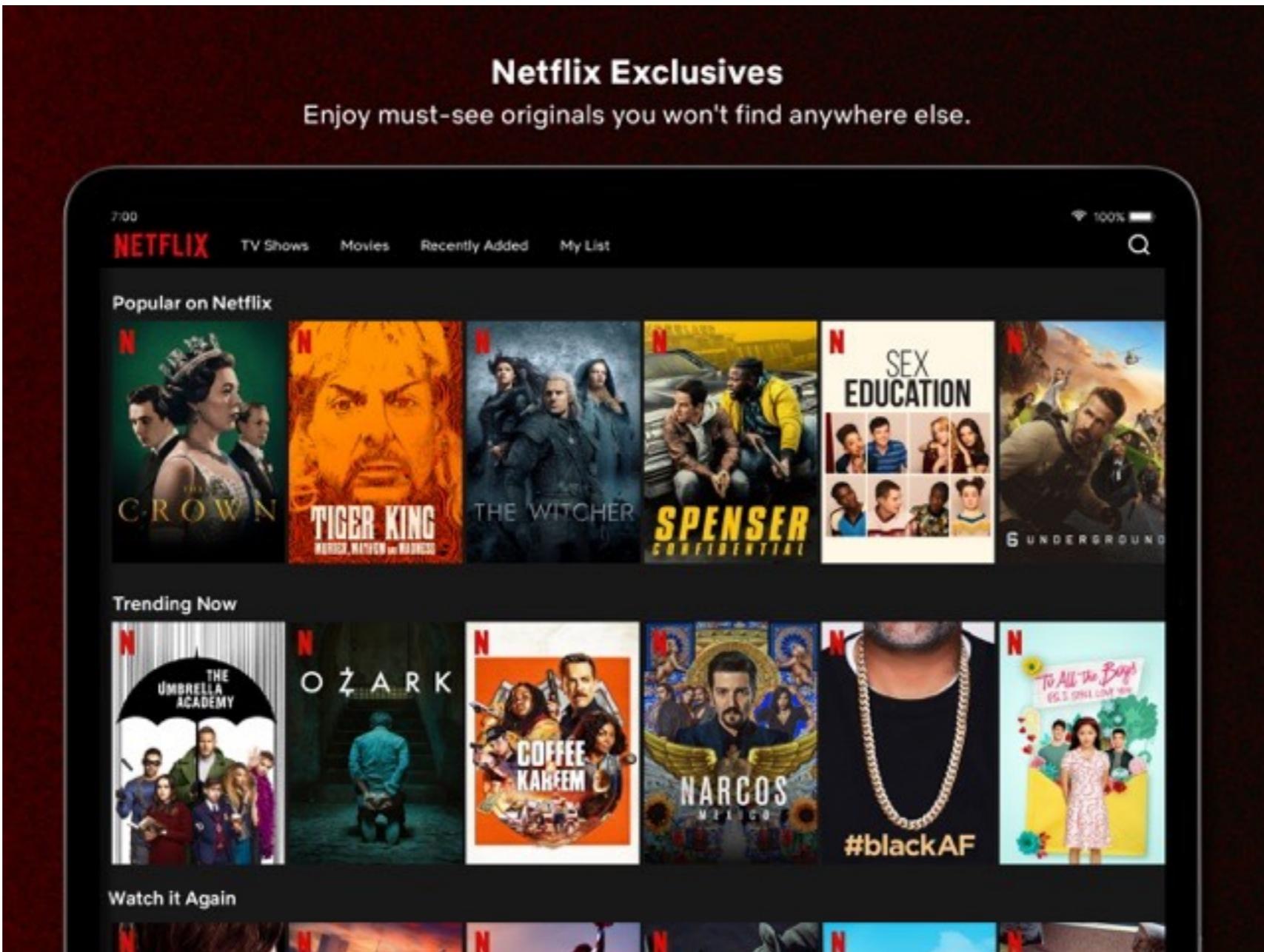
1. *The Imitation Game.*

I PROPOSE to consider the question, 'Can machines think ?' This should begin with definitions of the meaning of the terms 'machine' and 'think'. The definitions might be framed so as to reflect so far as possible the normal use of the words, but this attitude is dangerous. If the meaning of the words 'machine' and 'think' are to be found by examining how they are commonly

1950: l'hypothèse d'une "machine pensante"

MAKING SENSE OF ALGORITHMS

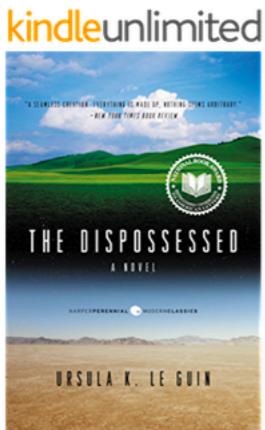
“Algorithms”: ordering/filtering



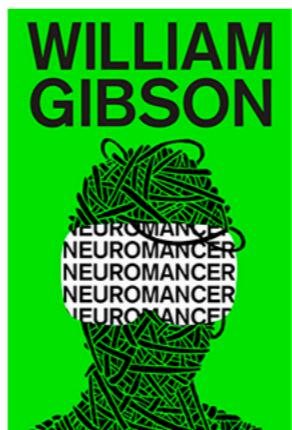
MAKING SENSE OF ALGORITHMS

“Algorithms”: social navigation

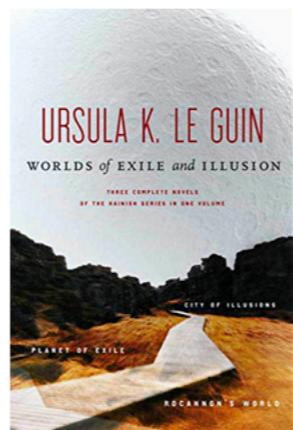
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MAKING SENSE OF ALGORITHMS

Suggestions based on traces



MAKING SENSE OF ALGORITHMS

“Algorithms”: talking to machines



MAKING SENSE OF ALGORITHMS

“Algorithms”: text-to-image generators



Algorithms as culture: Some tactics for the ethnography of algorithmic systems

Big Data & Society
July–December 2017: 1–12
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DOI: 10.1177/2053951717738104
journals.sagepub.com/home/bds


Nick Seaver

Abstract

This article responds to recent debates in critical algorithm studies about the significance of the term “algorithm.” Where some have suggested that critical scholars should align their use of the term with its common definition in professional computer science, I argue that we should instead approach algorithms as “multiples”—unstable objects that are enacted through the varied practices that people use to engage with them, including the practices of “outsider” researchers. This approach builds on the work of Laura Devendorf, Elizabeth Goodman, and Annemarie Mol. Different ways of enacting algorithms foreground certain issues while occluding others: computer scientists enact algorithms as conceptual objects indifferent to implementation details, while calls for accountability enact algorithms as closed boxes to be opened. I propose that critical researchers might seek to enact algorithms ethnographically, seeing them as heterogeneous and diffuse sociotechnical systems, rather than rigidly constrained and procedural formulas. To do so, I suggest thinking of algorithms not “in” culture, as the event occasioning this essay was titled, but “as” culture: part of broad patterns of meaning and practice that can be engaged with empirically. I offer a set of practical tactics for the ethnographic enactment of algorithmic systems, which do not depend on pinning down a singular “algorithm” or achieving “access,” but which rather work from the partial and mobile position of an outsider.

Keywords

Algorithms, ethnography, multiplicity, tactics, methodology

This article is a part of special theme on Algorithms in Culture. To see a full list of all articles in this special theme, please click here: <http://journals.sagepub.com/page/bds/collections/algorithms-in-culture>.

Terminological anxiety

At a conference on the social study of algorithms in 2013, a senior scholar stepped up to the audience microphone: “With all this talk about algorithms,” he said, “I haven’t heard anybody talk about an *actual* algorithm. Bubble sort, anyone?”¹ Over two days, speakers had covered algorithmic topics from Google’s autocomplete feature to credit scoring, but the questioner was right: they had not examined anything like bubble sort, a simple algorithm for ordering a list. Bubble sort, the questioner implied, was an *actual* algorithm; autocomplete was something else.

The conference, *Governing Algorithms*, hosted at New York University, was an early moment in the growing transdisciplinary field of critical algorithm studies—broadly speaking, the application of humanistic and

social scientific approaches to algorithms.² But already, one of the field’s central tensions was evident: Did these humanists and social scientists, taking on objects that had, until recently, been the domain of computer scientists, know what they were talking about?

As “algorithm” drifted out of computer science and into popular and critical academic discourse, it seemed to signify a renewed concern for technical specificity. Where “Big Data” was vague—originating in an over-heated marketing discourse—algorithms were precise. They were the core stuff of computer science,

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MAKING SENSE OF ALGORITHMS

Algorithms, as technology in general, are not neutral

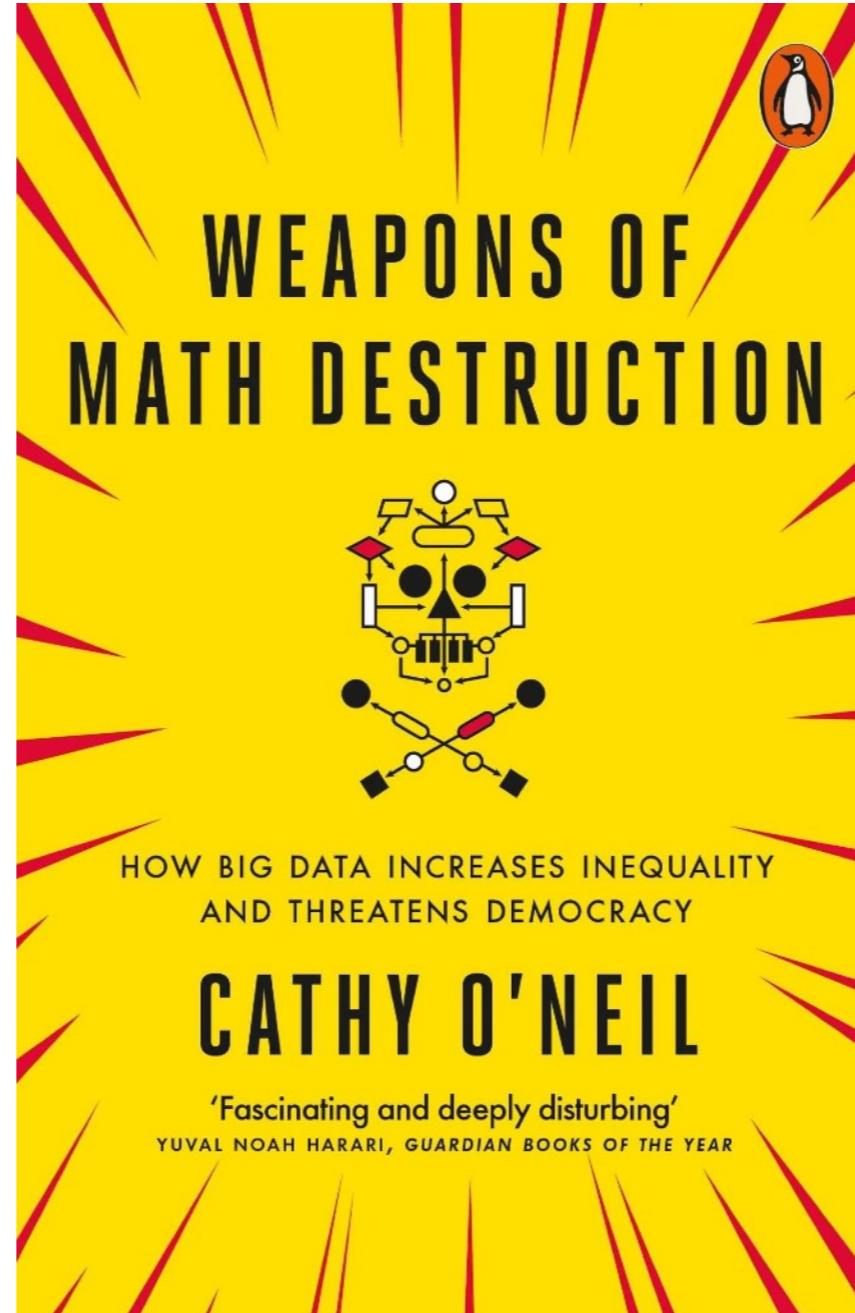
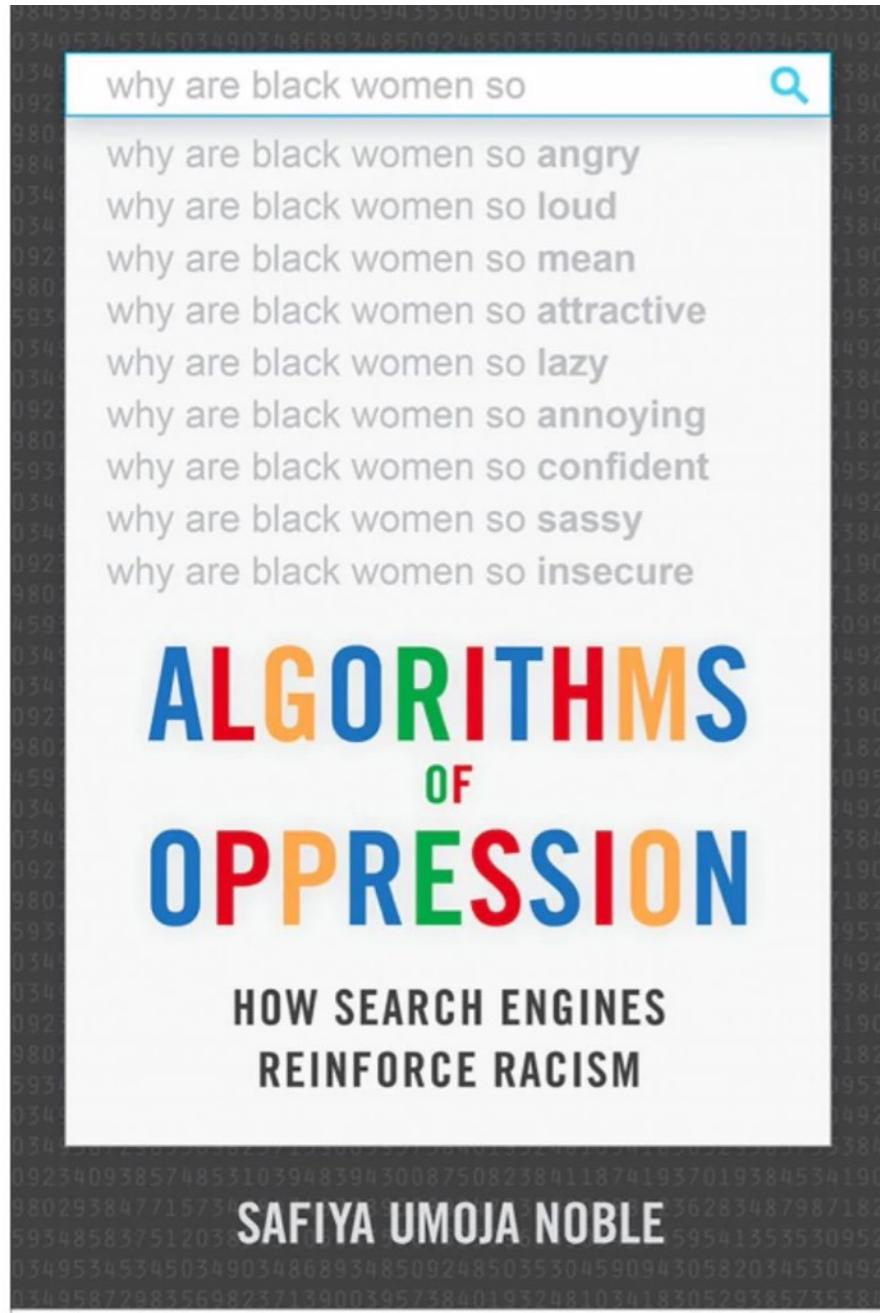
which the object is to be inserted.⁷ Designers thus define actors with specific tastes, competences, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways. A large part of the work of innovators is that of “*inscribing*” this vision of (or prediction about) the world in the technical content of the new object. I will call the end product of this work a “script” or a “scenario.”

The technical realization of the innovator’s beliefs about the relationships between an object and its surrounding actors is thus an attempt to predetermine the settings that users are asked to imagine for a particular piece of technology and the pre-prescriptions (notices, contracts, advice, etc.) that accompany it. To be sure, it may be that no actors will come forward to play the roles envisaged by the designer. Or users may define quite different roles of their own. If this happens, the objects remain a chimera, for it is in the confrontation between technical objects and their users that the latter are rendered real or unreal.

Akrich, M. (1992). The De-Scription of Technical Objects. In W. Bijker and J. Law (Eds.) Shaping Technology, Building Society: Studies in Sociotechnical Change. Cambridge, Mass, MIT Press: 205-224.

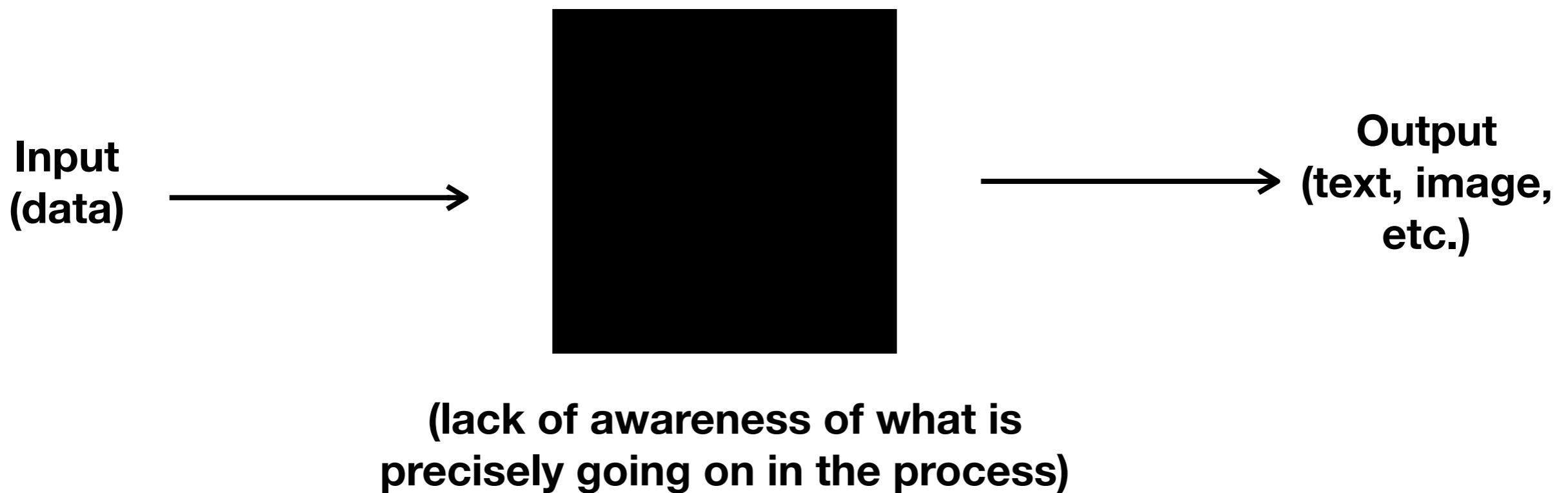
MAKING SENSE OF ALGORITHMS

Algorithms, as technology in general, are not neutral



MAKING SENSE OF ALGORITHMS

Algorithms as a “black box”: process invisibility



MAKING SENSE OF ALGORITHMS

Discussion of a research paper

Original Research Article



Folk theories of algorithmic recommendations on Spotify: Enacting data assemblages in the global South

Ignacio Siles¹ , Andrés Segura-Castillo², Ricardo Solís³ and Mónica Sancho³

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Abstract

This paper examines folk theories of algorithmic recommendations on Spotify in order to make visible the cultural specificities of data assemblages in the global South. The study was conducted in Costa Rica and draws on triangulated data from 30 interviews, 4 focus groups with 22 users, and the study of “rich pictures” made by individuals to graphically represent their understanding of algorithmic recommendations. We found two main folk theories: one that personifies Spotify (and conceives of it as a social being that provides recommendations thanks to surveillance) and another one that envisions it as a system full of resources (and a computational machine that offers an individualized musical experience through the appropriate kind of “training”). Whereas the first theory emphasizes local conceptions of social relations to make sense of algorithms, the second one stresses the role of algorithms in providing a global experience of music and technology. We analyze why people espouse either one of these theories (or both) and how these theories provide users with resources to enact different modalities of power and resistance in relation to recommendation algorithms. We argue that folk theories thus offer a productive way to broaden understanding of what agency means in relation to algorithms.

Keywords

Agency, algorithms, audience research, folk theories, Latin America, music streaming services, surveillance

MAKING SENSE OF ALGORITHMS

Project brief

Social media posting order, text-to-image generators à la Dall-E, Spotify track recommendations, interactions with Siri or Alexa, automatic door opening, train seat assignment... all of these interactions are mediated by algorithms. Some are quite complex, relying on Machine Learning techniques, some others are more straightforward. However, these algorithms play an increasing role in our daily lives. How can we study them? How can we investigate their presence? What about their influence on our social lives?

Method: in this individual project, each of you will pick a service and use interview methods to investigate how people use/react/(try to) understand/trick it. More specifically, you will look at how people have/build hypotheses about these algorithms, how they think the algos work, how they “test” them and what they learn out of it.

For December 17, prepare a 5 minutes podcast episode and a 10 minutes presentation in which you describe your findings (what technology you worked on, your methods, the main lessons you draw from it).

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Schedule

4.11.2024	5.11.2024	2.12.2024	3.12.2024	16.12.2024	17.12.2024
Introduction by Nicolas (main notions, algorithmic cultures, project brief), discussion with Nicolas	Tips for interviews Individual discussion with Nicolas	Tips for podcast editing + individual discussion with Nicolas	Individual discussion with Nicolas about your project	Individual discussion with Nicolas about your project Last adjustments on podcast episode montage	Project presentation
Self-study time (project plan, interview guide)	Self-study time (desk research and/or interviews)	Self-study time (interviews)	Self-study time (interviews)	Preparation of your project presentation	Project presentation

MAKING SENSE OF ALGORITHMS

1. Each student pick a technology and their algorithms

Social media posting order, Spotify track recommendations, interactions with Siri or Alexa, automatic door opening, seat attribution in Swiss trains, search engine...

Go to <https://etherpad.wikimedia.org/p/mdseminar2024> write down your name and the technology you chose

MAKING SENSE OF ALGORITHMS

2. Find documents (academic papers and talks)

Literature review: look at the literature about your topic: who already wrote about this? Check academic papers on Google scholar (or some other platforms) first, then expand it to more general documents (journalism, blogposts, newsletters, etc.)

Define the keywords you are interested in.

Example: netflix, usage, user research, interaction

Try academic search engines, such as Google Scholar, with such keywords. The idea isn't to find technical paper about your topic, but look for any research about usage, user research, sociology, anthropology or STS (Science & Technology Studies).

MAKING SENSE OF ALGORITHMS

3. Research method: interview

- User interview or focus group (group discussion): look for evidences of how people use them, try to understand them, and try to trick them.
- Please no “expert interview” (do not interview existing experts of this topic, the goal here is to interview users)

For December 2 in the morning, please prepare your research plan. It's a document that describes your method : (1) your topic and why you are interested in it, (2) a short interview guide: a list of 5-7 topics you will talk about with people. An interview guide is not a questionnaire, it's a set of themes to guide your discussion, (3) your sampling strategy, e.g. who you want to talk to, and how to find those people.

No questionnaire sent by email, only recorded face-to-face OR visio discussion (we need audio material of a podcast episode). At least three interviews. In any case, write down notes about what you learnt, every time you find something significant (a usage pattern from a user or a document you read, an hypothesis you read, something you learnt using this algo, etc.)

MAKING SENSE OF ALGORITHMS

4. Presentation and report in December

Format

- We need a beta version of your podcast episode by December 3 (evening), in order to review things on December 16.
- Your podcast episode, not more than 5 minutes. It should be made of samples of your interviews, with you commenting (highlighting a concept, discussing something a person said with an academic reference)
- Class presentation on December 17, 2024 (podcast episode + 10 minutes of comments with a slide deck)

Issues to be discussed:

- **What's our podcast called?**
- **Shall we have the same sound/sample at the beginning and the end?**

MAKING SENSE OF ALGORITHMS

A bibliography

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INTERVIEWING PEOPLE

Tips and recommendations



INTERVIEWING PEOPLE

Tips and recommendations: planning your research

1. Question: define your research perimeter + questions YOU are interested in.
2. Who are you interested in? Where to go, and from whom, the material can be obtained?
3. Interview guide: a list of 5-7 topics you will talk about with your interlocutors. An interview guide is not a questionnaire, it's a set of themes to guide your discussion.

INTERVIEWING PEOPLE

Tips and recommendations: planning your research

What do I want to know?

Why do I need to know this?

What kind of material/people/photo will allow me to answer this question? Where to go?

INTERVIEWING PEOPLE

Tips and recommendations: sampling

“Sampling”: the practice concerned with the selection of cases (people, activity, group, situation) intended to yield some knowledge. In quantitative research, sampling is about selecting (randomly) a sufficiently large amount of cases within a given mother population, in qualitative research, there are different approaches...

INTERVIEWING PEOPLE

Tips and recommendations: sampling

Type of sampling	Main usage in design
Random (pick-up participants randomly)	Get a representative sample of the population
Homogeneous (select participants that corresponds to the same criteria)	Provide better focus and safer conclusions
Maximal variation (select highly different participants according to one or more criteria)	Give better scope to the research results
Based on your theory (depends on your questions, hypotheses)	Test an hypothesis, test your design questions
Extreme cases (pick-up only weird and deviant cases)	Test the boundaries of a model or seek new possibilities
According to reputation (choose participant based on recommendation by experts)	Explore more deeply

INTERVIEWING PEOPLE

Tips and recommendations: contact + rapport

Contacting people means asking them the permission to chat with them, which means that you need to explicit your goals without being too technical/scary. Be friendly!

Building “rapport” means that you need to develop a fruitful relationship with the research participants, tell them you won’t judge them, that they are the experts and you’re just curious about their perspective.

Ethical issues: you must ask them for their consent to be recorded and to use their answers/voice. Orally for this project but sometimes we use written forms. You can tell them you will anonymize them/their identity.

INTERVIEWING PEOPLE

Tips and recommendations: talking to people

Don't set hypothesis too early! It's better to have open and neutral questions

Avoid qualitative comments on answers

Ask lots of questions in order to clarify what has been said (e.g. examples or to whom/which object an informant refers to).

Repeat what the informant has just said to help him/her elaborate and add details.

Follow the informants' leads/logic, do not avoid to explore unexpected leads.

Use the same vocabulary as the informants!

Try to understand what isn't said.

Try to consider things beyond your research scope.

Don't interrupt, break the flow

INTERVIEWING PEOPLE

Tips and recommendations: you talked to people, now what?

1. Data overview: get the sense of the data as a whole (read interview transcriptions, look at pictures, video...), sort similar data (photo, quotes), note your first reactions.
2. Pick up one data item, understand and extract the main points and topics you see (motivations to do something, opinions, peculiar stories, relevant behaviour, pertinent response to something, use of a tool/feature, surprising reactions, interesting problem(s) that reveal(s) unmet needs, unexpected failure(s), an emotion...)
3. Repeat this for several data items, make a list of all topics. Certain themes are always present (ways to trick the algorithm, problems, user types...)
4. Use this list to get back to your data. Look for the presence of these topics in your data.
5. Find the most descriptive wording for your topics and turn them into categories.

INTERVIEWING PEOPLE

Tips and recommendations: you talked to people, now what?

What you collected: usage anecdotes, problems, surprises, tactics to trick the algorithms, frustrations, etc.

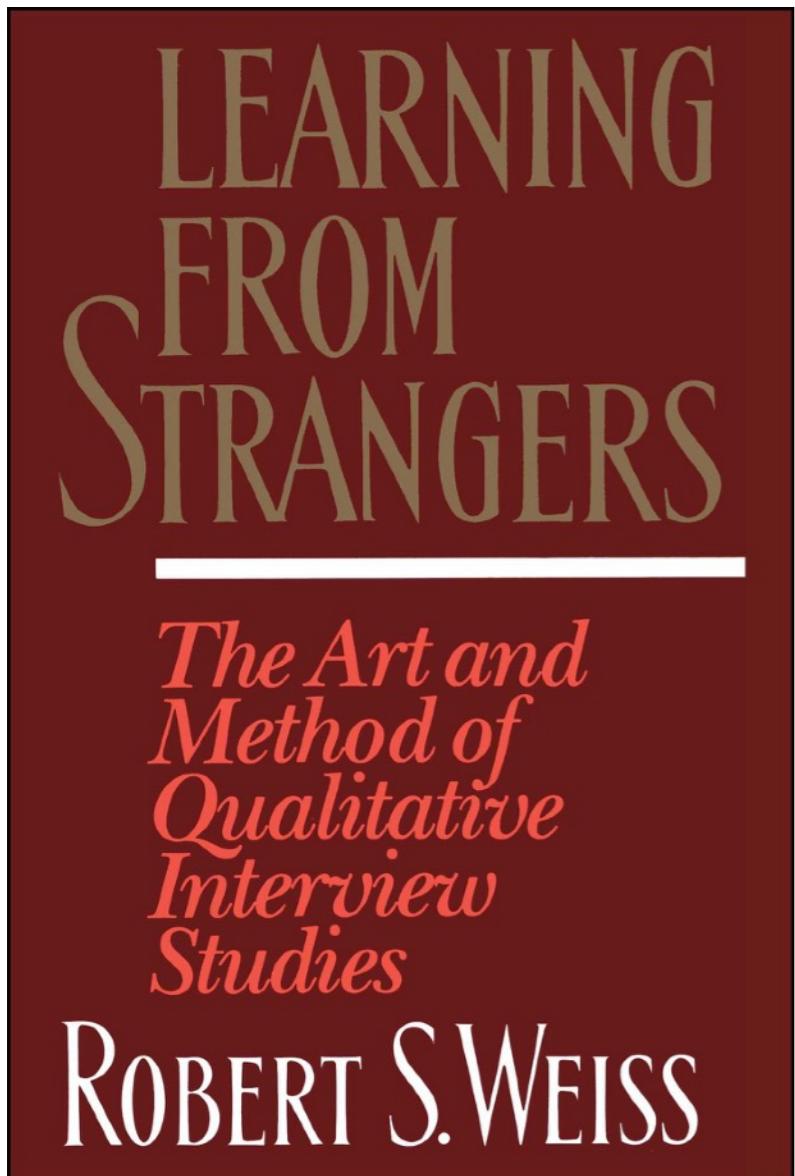
You will have to pick some of these elements and comment them in your podcast episode. Which means that you have to select only a limited number of these elements from the various interviews you did.

Your comment will be based on your perspective, and, ideally at least one academic reference.

(We will discuss the episode structure next time, in the meantime, listen to various podcasts in order to find inspiration)

INTERVIEWING PEOPLE

References



PODCAST PRODUCTION

Situation report

How far are you in the project? What needs to be done?

Question for us: podcast name + common sound/jingles

<https://etherpad.wikimedia.org/p/mdseminar2024>

PODCAST PRODUCTION

Tips and recommendations (November sessions)

How to Structure Your Audio Show



PODCAST PRODUCTION

Tips and recommendations (November sessions)

Time code	Sequence name	Content	Type of content
00:00 - 00:18	Opening	Sound opening	Audio jingle
00:18 - 00:56	Introduction	My voice	Audio recording
00:57 - 1:22	Excerpt 1	Voice of informer	Audio recording
...

PODCAST PRODUCTION

How to use *the* academic reference in the podcast

- Reference to a general concept (algorithmic imaginary, black box), a concept that can explain something one of the interviewee told you about, etc.
- Reference to another study, in order to make a comparison between “your” algorithm and another one, or between a result from something else and your study