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Nexa Center for Internet and Society

Tecnologia della rivoluzione

Progresso e battaglie sociali dal microonde all'intelligenza artificiale

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Omar is a 16-year-old boy of Syrian origin living in the Netherlands, His father is arrested for domestic violence, and Omar himself is classified as a potential criminal by a predictive policing algorithm based on **historical and socio-economic** data.

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- The algorithm, part of the Top400 and ProKid+ project in Amsterdam, predicts that Omar and other teenagers will be involved in criminal activities in the future, despite the fact that they have not (yet) committed any crimes.
- Critically reflecting on the use we are making of automated decision-making through statistics-based techniques that in this way can only exclude and discriminate against certain social groups, taking away the possibility of emancipation and self-determination.

Aims

- Counter discourses filled with the catastrophism, anthropologization and inevitabilism by putting AI back on a technological trajectory

- Reflect on the concept of revolution attributed to technology for a long time. Starting with those of the past, the invitation is for a critical reflection on modern technologies, in particular artificial intelligence and its social impacts, presented in turn as several revolutions together, starting with the question: how can we construct our technologies in such a way that they do not lead to social involutions?

- Revealing how AI-as well as all other technologies and artifacts in history-is a social construction, a product of specific cultural, political, and social ideas, intentions, and values always to be traced contextually

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Aims

- Show and reflect on the many different ways that exist to conceive, design and experience a technology.
- Technology should be an open field for social participation and negotiation, rather than an inevitable fate.

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Theoretical background

- Social constructivism (part of STS) studies of technology (Noble 1978; Callon 1980; Bijker, Hughes & Pinch 1987; MacKenzie & Wajcman 1999; Pinch & Bijker 1984;

- Gender and feminist technology studies (Harding 1986; Wajcman 1991; 2004; Haraway 1991; Cockburn & Ormrod 1995; Faulkner 2001).

Theoretical background

- Interpretative flexibility: different groups or stakeholders may have different views or uses for a given technology. This results in multiple possible outcomes for a technology's development, depending on which group has more influence.

- Technological determinism: «the belief that social progress is driven by technological innovation, which in turn follows an "inevitable" course.» (Smith & Marx 1994)

Theoretical background

- This idea of progress is centralized around the idea that social problems can be solved by technological advancement, and this is the way that society moves forward.

- Technological determinists believe that "'You can't stop progress', implying that we are unable to control technology" (Lelia Green). This suggests that we are somewhat powerless and society allows technology to drive social changes because "societies fail to be aware of the alternatives to the values embedded in it [technology]" (Merritt Roe Smith).

- In this view, the role of agency (the power to affect change) is imputed on the technology itself, or some of its intrinsic attributes.

«Social scientists have tended to concentrate on the 'effects' of technology, on the 'impact' of technological change on society. This is a perfectly valid concern, but it leaves a prior, and perhaps more important, question unasked and therefore unanswered. What has shaped the technology that is having 'effects'? What has caused and is causing the technological changes whose 'impact' we are experiencing?»

— MacKenzie & Wajcman 1999

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«Technology is always a form of social knowledge, practices and products. It is the result of conflicts and compromises, the outcomes of which depend primarily on the distribution of power and resources between different groups in society.»

— Wajcman 1991

Technological revolutions

- Technologies, although presented as revolutionary, often reproduce and amplify existing inequalities.
- Revolution can be understood in either in its more political-subversive or technological-innovative sense. Why, however, do the two rarely go together? An example is domestic and reproductive technologies, developed with the promise of liberating women, have often reinforced their traditional roles.


ALL TRUCKS
BUSES TRAILERS
MUST EXIT
LOW BRIDGE
CLEARANCE 7'-10"

Gender blindness

- Why did feminist scholars feel the urge to introduce a discourse on gender within this field of research?

1. Women have always been excluded from technological construction. This phase, which coincides with the second wave of feminism in the late 1970s and early 1980s, was characterized by a narrative of "exclusion".
2. The marginalization of gender by constructivist scholars depends on their concept of power: they identified and studied the groups or social networks that actively influenced the design and direction of technological planning.
3. The origin of men's dominance over technology has been debated for decades. Is it due to patriarchal interests and structures, or is there something inherently "genderized" about technology?

Why so few? Women and labor

- In the feminist narrative of exclusion, particular attention has been focused on the causes and consequences of women's lack of participation in the production and planning of technology. In particular, the fields of engineering and computer science have been defined as "male cultures" (Harding 1986).
- In the 1990's, some technology feminists spoke of this male-dominated culture as alienating for women who tried to approach it and to which they had to "adapt", speaking also about experiences of discrimination and harassment.

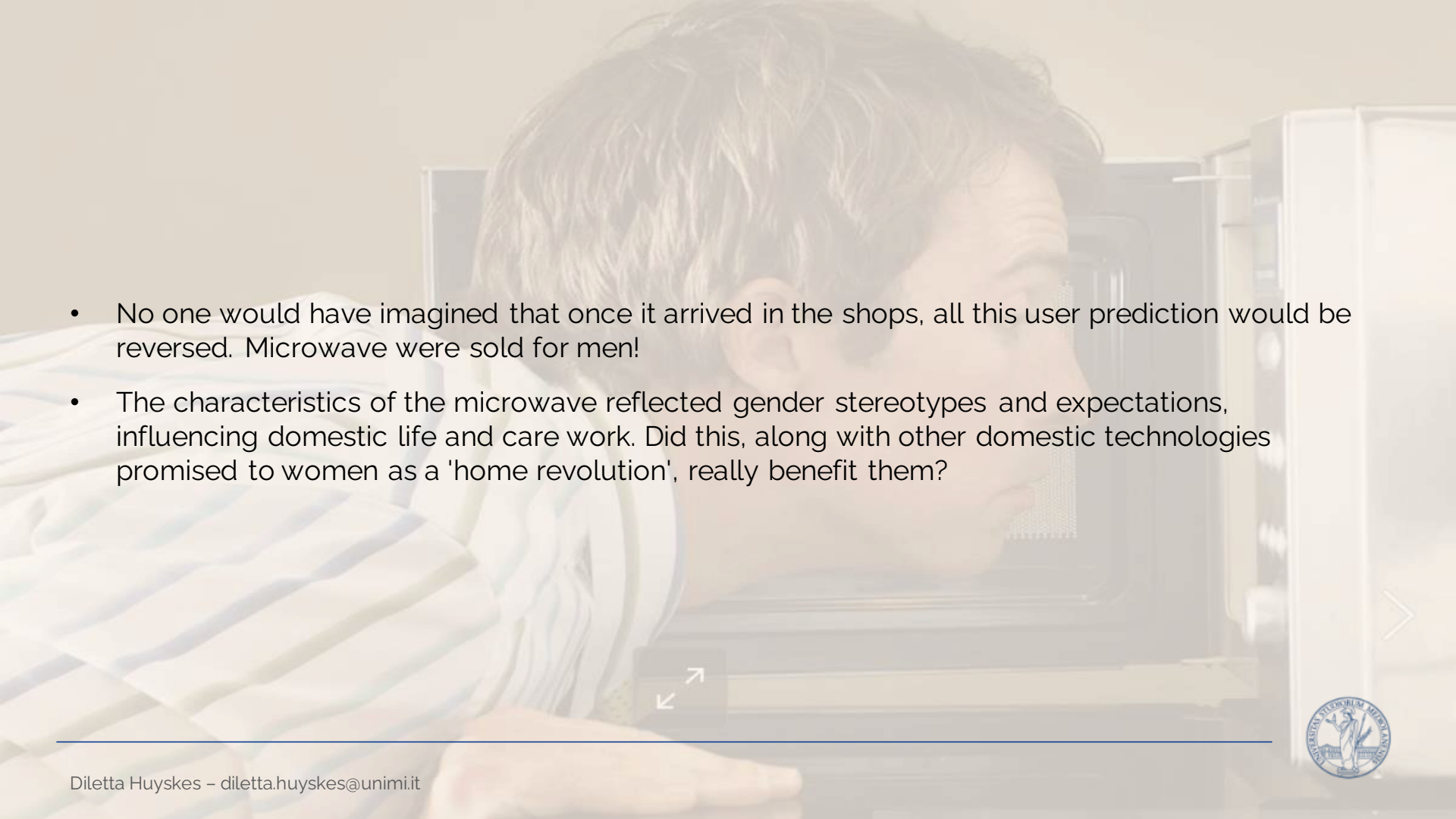
Gendered technologies

- Anne-Jorunn Berg and Merete Lie argued that technology is inherently 'gendered', predominantly male (1995), in the sense that they are designed having in mind who is expected to use them. Concretely, this most often means that technologies are designed with men in mind as neutral subjects, while specific intentions and logics take over for women.
- The feminist debate on technology has oscillated between essentialist views, which see technology as inherently masculine and dominating, and constructivist views, which promote a deconstruction of technological practices to liberate gender
- Female liberation or increased control?

Military technologies: "toys for the boys"

- According to some male scholars, patriarchal culture has influenced the development and use of technologies.
- The discourse also extends to the social construction of masculinity through technology, criticising the predominant representation of technologies as instruments of power and control typically associated with a masculine identity, I do not think it is correct to defer to the masculine nature or intrinsicity of a system, but rather I think it is necessary to enhance its social construction.
- MacKenzie (1995) shows the cultural difference in developing the same technology and how there are and always will be different ways to design a technology and inventing the existent.

Domestic technologies



- No one would have imagined that once it arrived in the shops, all this user prediction would be reversed. Microwave were sold for men!
- The characteristics of the microwave reflected gender stereotypes and expectations, influencing domestic life and care work. Did this, along with other domestic technologies promised to women as a 'home revolution', really benefit them?

Promises of revolution

Super meccanicizzata ma sempre affaticata.
Foto di Anna Ducci e Mariuccia Romano, 1975, archiviomovimenti.org.

The case of reproductive technologies demonstrates how most available studies on gender and technology were either inherently pessimistic or optimistic. Technology is presented as deterministically patriarchal (or capitalist) with women as victims in the former, while technology is seen as tending toward being neutral, optimistic and exciting in the latter, which has reached its maximum expression in cyberfeminism.

Feminist optimism: technologies for liberation

- Haraway (1991) was the first to introduce a reflection on the construction of knowledge from a gendered perspective, a feminist epistemology that favors those who "remain on the outside" and at the margins: **situated knowledges**, which should still influence the study of technological discrimination today.
- Can we use technology to hack the codes of patriarchy? Can we escape gender when we're online? (Plant 1997)
- Machines are feminine, but isn't this the most essential way to represent gender, and what is more deterministic than this?

Beyond gender

- Feminist studies have highlighted gender blindness in technological construction and consumption. However, even these studies have sometimes reproduced a gender determinism. Above all, they have been blind to all the other forms of social exclusion that technology can reproduce.

- To fully understand the interactions between technology and society, it is necessary to adopt an empirical approach that considers the different experiences and interpretations of the same technology by different social groups and different cultures. This is the only way to overcome the idea of technology as neutral and unveil the different dimensions of power and inequality that it entails.

Our technologies

- Machine learning systems, dominated by statistical inference and used to support human decisions, systematically rely on the past to predict the future perpetuate existing inequalities and discrimination, and depending on how we construct them become barriers to entry and instruments of exclusion.

- Technologies and their design, such as Penny Farthing bicycles or Moses' New York bridges, have historically excluded certain social categories. AIs, with their iterative learning capability, can amplify this.

Classifying the unclassifiable

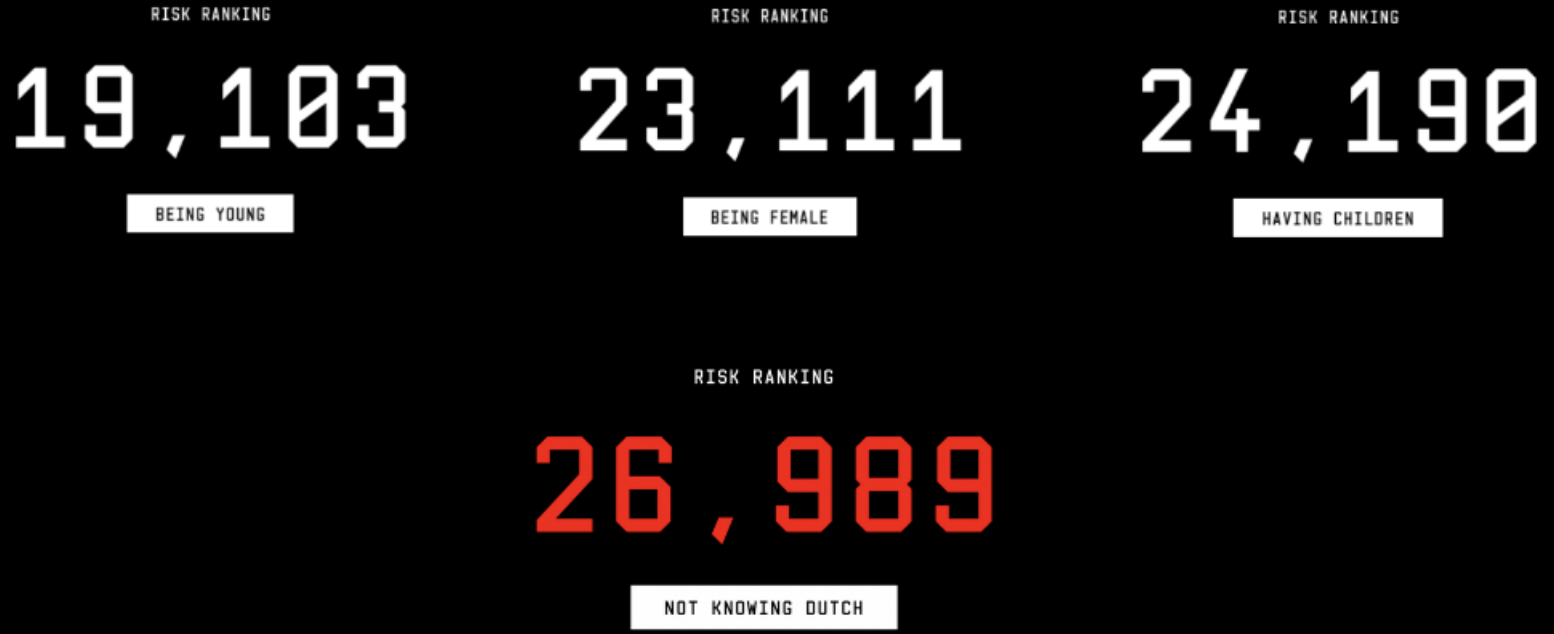
- Data classification has often involved bias and discrimination, as in the case of apartheid South Africa, where racial classifications were imposed to justify injustices.
- A less common story of AI is the history of classificatory systems.
- Modern statistics, developed by figures such as Francis Galton, Karl Pearson and Ronald Fisher, has been influenced by eugenic theories, using statistical tools to support ethnical discrimination.
- The automation of classification can perpetuate inequalities if not considered in social and historical context.

Unprecedented injustice

- A concrete case of automated decision-making in public services from my academic research to explain how it led to structural discrimination and injustice.

- ***«Maybe, by looking at which car you drive, we can learn that you fraud the social security system»*** (Director of Tax Autorithy, The Netherlands, around 2012)

- The city of Rotterdam, as well as the national government, have used algorithms to predict the risk of fraud in social assistance applications, based on historical data and personal variables such as age, gender, economic situation and nationality. The algorithm discriminated on the basis of nationality, leading to thousands of families being falsely accused of fraud, with devastating consequences.



Source: Lighthouse Reports, WIRED, Suspicious Machines (2023)

Matrix of oppression

- The case highlights not only the technical failure of the algorithm to calculate risk accurately, but also the broader problem of structural discrimination and social injustice perpetuated through automated tools.

- Mathematical matrices can be the perfect representation of matrices of oppression (Collins 2000), highlighting how automated tools, instead of eliminating prejudice, can actually reinforce axes of oppression in an unprecedented way through their vector layering.

Identity as segregation

- Reflecting on the idea of forced conformity and categorization, which is reflected in modern data systems and algorithms.

- Poststructuralism emphasized the becoming and multiplicity of identities, countering the idea that identity is innate and immutable (Deleuze 1986).

- We are experiencing an unprecedented situation where we try to fight for the recognition of our identities as fluid and unclassifiable, but we are dealing with tools that can structurally segregate them with great repercussions on our lives. Some of these, as in Omar's case, pose new challenges for the recognition and self-determination of identities, creating tensions between institutional rigidity and individual fluidity.

Conclusions

- Technological innovation is presented as inevitable progress, but often anchors us to ancient forms of oppression and discrimination. This raises crucial questions: can we trust systems that classify us and make us repeat past behaviour? Which classifications are useful and which should be abandoned? And above all, what is the role of change if we keep returning to old patterns?

- Technological innovation is not an inevitable process, but is influenced by human choices and socio-technical contingencies.

- Artificial intelligence can paradoxically help visualise and better understand discrimination when used to investigate the diverse and situated experiences of social groups.

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2nd AEQUITAS Workshop on Fairness & Bias in AI
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Thank you!

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