AI LIABILITY AND THE *IDEOLOGIES* OF TRADITIONAL LAW AND ECONOMICS

What's Up?

- Risks to fundamental rights, safety and health
- GDPR and AI Act Cost benefit analysis or precautionary approach?
- Private law liability for high risk AI systems
- Chicago Schools of (law and) economics
- New Economic Analysis of Law

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AI Act: risks to rights and safety

- AI Act is not just about automated decision making (e.g. risks to fundamental rights)
- It also regards behaviour of e.g. embedded systems (e.g. risks to safety and health)

- Fundamental rights are not just private interests but also public goods
- The substance they aim to protect (*geschützte Rechtsgut*):
  - is often a public interest key to constitutional democracies
  - not easily defined, essentially contested concepts
  - e.g. privacy, non-discrimination, presumption of innocence

A. Eser, 'Rechtsgut und Opfer : zur Überhöhung des einen auf Kosten des anderen', Festschrift für Ernst-Joachim Mestmäcker 1996, p. 1005–1024, idem 'Principle of Harm in the Concept of Crime: A Comparative Analysis of the Criminally Protected Legal Interests, The', Duquesne University Law Review 1965/4, p. 345.

AI Act: risks to fundamental rights

- What is a risk to a right?
  - Calculated prediction of a violation?
  - Qualitative probability of infringements?

- If we start calculating we will start arithmetics: addition and substraction
  - Inviting the CBA: e.g. weighing costs of violation against gains of innovation
  - Glossing over distributive effects: whose gains against whose loss

- If we anticipate likelihood of infringement
  - We can foresee potential prevention or mitigation
  - We can address complex interaction between societal and individual level impact
  - We should become liable for redress if infringements are violations

AI Act: risks to fundamental rights

- Qualitative probability of infringements?
  - IRL we think in terms of uncertainties in qualitative not numerical terms
    - Likely, very likely, highly likely or terrible, poor, ok, good excellent (ranking)
  - The numerisation is a proxy (not the other way round)
  - Aldous https://www.stat.berkeley.edu/~aldous/Real-World/quantitative.html
    - **Pain.** We are sure that a pinprick is less painful than a toothache, but less sure whether today's toothache is less painful than last week's headache was.
    - **Criminality.** We are sure that murder for profit is more criminal than minor theft, but less sure how to compare counterfeiting and embezzlement.
    - **Movie ratings**, which one could express on a numerical scale, 1 - 5, say, or equivalently via words terrible, poor, OK, good, excellent.

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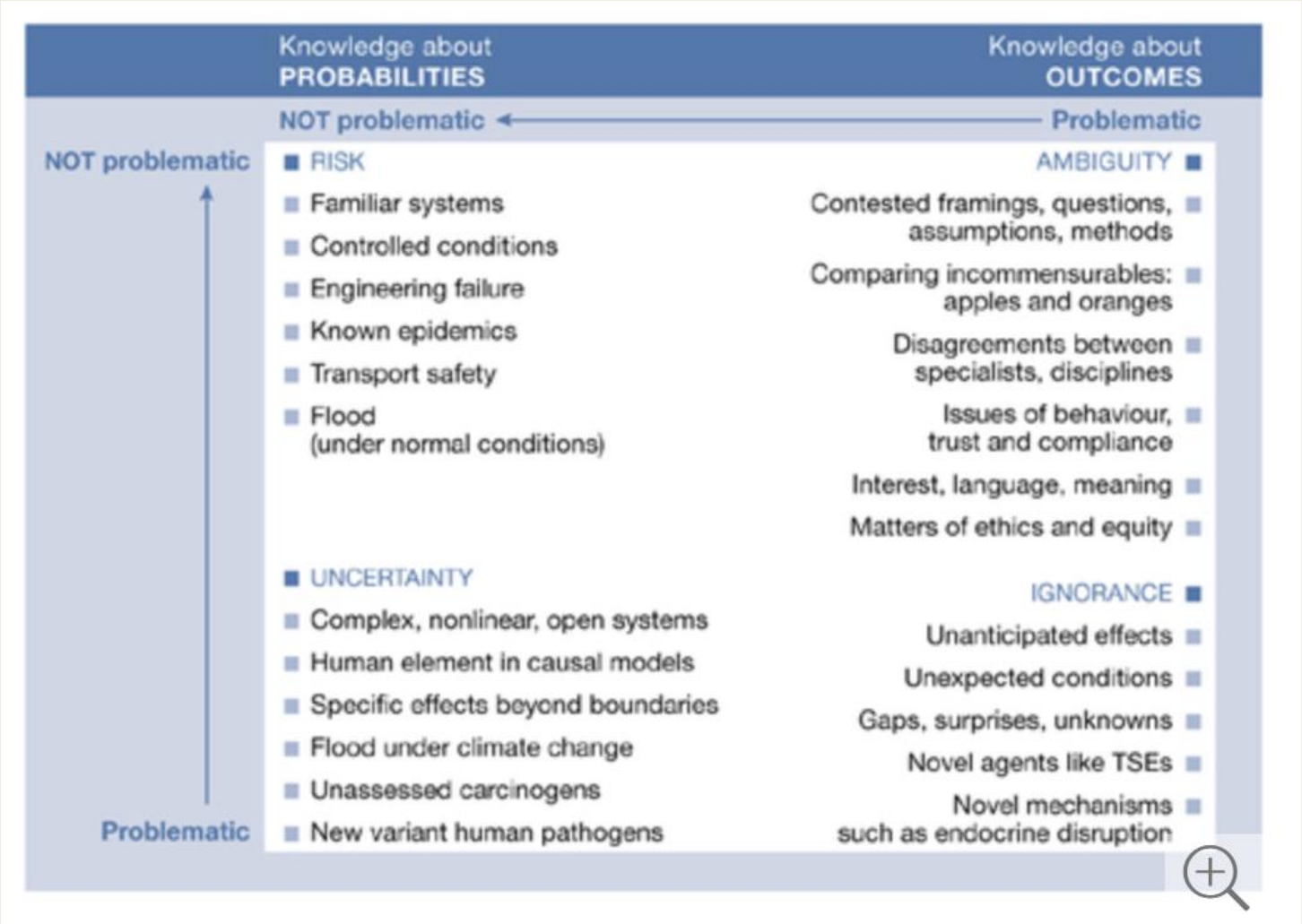

Andy Stirling, Risk Precaution and Science: Towards a More Constructive Policy Debate, EMBO Rep, Volume: 8, Issue: 4, Pages: 309-315, First published: 09 March 2007, DOI: (10.1038/sj.embor.7400953)

Stirling on four types of incertitudes:

- RISK
  - Known probabilities
  - Known outcomes
- Uncertainty
  - Unknown probability
  - Known outcome
- Ambiguity
  - Known probability
  - Unknown outcome
- Ignorance
  - Unknown probability
  - Unknow outcome

Risk in the AI Act: CBA or PA?

- RISK
  - Known probabilities, known outcomes
  - Traffic accidents in case of self-driving cars?
- Uncertainty
  - Unknown probability, known outcome
  - ‘Collateral death’ using killer drones?
- Ambiguity
  - Known probability, unknown outcome
  - Release-decisions based on COMPAS?
- Ignorance
  - Unknown probability, unknown outcome
  - Smart cities, internet of things?

Risk in the AI Act: CBA or PA?

- Risk to rights in the AI Act is about various types of incertitudes, not about risk in the narrow sense
- Outcome (potential infringements of fundamental rights) is often not measurable, even if foreseeable
- This requires a precautionary approach:
  - An assessment of the probability of infringements
  - Prevention or mitigation of the probability that the 'risk' materialises, i.e. violation
- Anticipation and adaptation – the way of life

(Upcoming doctorate thesis Katerina Demetzou)

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Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law:

1. respecting individual autonomy, enabling human agency, making sure that individuals can make informed choices without undue influence etc.;
2. ensuring justice, such as compensation of inequality that diminishes individual autonomy, which may require a party to, for example, inform the other party or to shift the burden of proof to the party with access to relevant evidence;
3. enabling the societal trust that is pivotal for the functioning of economic markets, by creating legal certainty in the case of conflicting expectations (think possession/ownership; standards of reasonableness or equity)

Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law:

1. respecting individual autonomy, enabling human agency, making sure that individuals can make informed choices without undue influence etc.;
   - Natural persons should be capable of assessing the relevant consequences of AI systems that affect them, they should be free from unlawful targeting and not be forced to interact with such systems, or targeted by AI systems unless this is justifiable and relevant safeguards are in place
     - Art. 22 jo 15 and 79 jo 80 GDPR, art. 4, 6-8, 52 AIA, upcoming update EPLD
   - note that AI systems and/or the services they provide will often be credence goods

Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law:

2. ensuring justice, such as compensation of inequality that diminishes individual autonomy, which may require a party to, for example, inform the other party or to shift the burden of proof to the party with access to relevant evidence;
   - Reasonable mutual information obligations between providers/deployers of AI systems and natural persons affected by these systems, taking into account information asymmetries, skewed choice architectures, attempts to manipulate preferences, and underlying economic incentives (often perverse)
     - Art. 12-15 jo 79 and 80 GDPR, art. 13, 52 AIA and the upcoming update of the EPLD
   - note that AI systems and/or the services they provide will often be credence goods

Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law:

3. enabling the societal trust that is pivotal for the functioning of economic markets, by creating legal certainty in the case of conflicting expectations (think possession/ownership; standards of reasonableness or equity)
   - compliance with requirements for the resilience, robustness, reliability and responsible design & deployment of AI systems
     - Art. 25, 25 jo 79 and 80 GDPR, art. 6– 29 AIA and the updated EPLD
   - note that AI systems and/or the services they provide will often be credence goods

Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law according to old school L&E:

- Attribution of liability to least-cost-avoider (Coase Theorem, Calabresi & Melamed):
  - Developer? Provider? User? Natural persons affected by the system?
  - So far it seems that providers of AI systems had a free ride which is more like Melamed's property rule 'economic efficiency asks for that combination of entitlements to engage in risky activities and to be free from harm from risky activities which will most likely lead to the lowest sum of accident costs and of costs of avoiding accidents'

- How to define cost here:
  - Missed profits due to changes in the business model, required by GDPR and AIA?
  - Infringement of fundamental rights (how to quantify)?

Tort liability when high risk AI systems infringe fundamental rights

Objectives of private law according to nudge school L&E:

- Attribution of liability to 'choice architects':
  - Developer? Provider? User? Natural persons affected by the system?

- Based on vague notion of 'behavioural asymmetry'

T. Verheyen, 'On Behavioural Asymmetry in Product Liability Law: How Privatising Nudging Will Get European Product Liability Theory Back on Track', *Journal of European Tort Law*, vol. 12, nr. 1, pp. 40–64, apr. 2021, doi: 10.1515/jetl-2021-0002

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The Chicago Schools of Law & Economics

- Rational Choice Theory: homo economicus, game theory (Friedman, Becker)
  - Law and economics (e.g. Posner, optimisation for pareto-efficiency)

- Nudge theory: homo behaviouralis, cognitive bias (Kahneman, Thaler)
  - Law and economics (e.g. Sunstein, libertarian paternalism)

The Chicago Schools of Law & Economics

- Advising the legislature how to attribute
  - what type of liability
  - for what kind of events
  - to what entities
  - if so (maybe avoid liability rules in favour or property rules)

- Advising the courts how to decide issues of liability
  - Information duties (ex ante)
  - Burden of proof (ex post)

24 SEP 2021

Clarifying the costs for the EU's AI Act

Artificial Intelligence (AI) is set to disrupt businesses and all our lives in the 21st century, leading **governments around the world** to publish strategies for tapping the potential of AI. The EU definitely wants to ensure its place at the top table when it comes to harnessing the vast opportunities promised by AI, leading to the European Commission to publish its own comprehensive **AI Strategy** in April 2021. However, the regulation of these technologies is becoming an increasingly contentious political battleground.

Sound assessments of the costs and benefits of AI regulations are therefore an essential prerequisite for an informed democratic debate. A **policy paper by the Centre for Data Innovation (CDI)** recently published figures on the costs of the **proposed EU AI Act**, a key component of the EU's AI Strategy. This CDI paper contained figures which has caused numerous **headlines** such as: "*Europe's proposed A.I. law could cost its economy $36 billion*".

The figures in the CDI paper are based on a study, which we at CEPS conducted (in cooperation with **ICF** and **Wavestone**) to support the **European Commission's Impact Assessment** for the AI Act in late 2020 (hereafter, '**the Study**'). Unfortunately, despite the detailed explanation contained within the Study, the CDI paper contains incorrect and spurious information concerning the prospective cost of the proposed AI Act. This is unfortunate because it leads to grossly exaggerated cost figures. As the CDI paper partly replicates numbers from our Study and recompiles them in a misleading way, we are taking the opportunity to address the main concerns raised by the CDI paper, in the hope that this will help restore some clarity on the methodology and the main results of our analysis.

The CDI's cost extrapolation is factually incorrect

Mont Pelerin Society and Hayek

- The roots of neo-liberalism:
  - Ideological emphasis on negative individual freedom (*freedom from*)
  - Belief that inequality creates the incentive structure for increasing wealth
  - Corporations should be treated as individuals (they have a *similar freedom from*)
  - Concentration of corporate power and wealth is not a bug but a feature
  - Liberalism is in many ways at odds with democracy (and liberalism is the most important)

- Active if not aggressive 'marketing' for a dedicated 'law and economics' approach
  - Classical economic theory was about laissez-faire, minimal state
  - Neo-liberalism is constructivist: market reconfigurations are to solve all and any problems
  - Rational choice theory based on the idea of pareto efficiency to rule legal decision making
  - Individual choice should be manufactured by creating the right incentive structure
  - The market is the only omniscient information system, securing the right individual choices

P. Mirowski and D. Plehwe, Eds., The Road from Mont Pelerin: The Making of the Neoliberal Thought Collective, 1st edition. Cambridge, Mass: Harvard University Press, 2009; L. Khan, 'The Ideological Roots of America's Market Power Problem', Yale Law Journal, vol. 127, 2018, Accessed: Mar. 01, 2020. [Online]. Available: https://www.yalelawjournal.org/forum/the-ideological-roots-of-americas-market-power-problem

Methodenstreit

- Methods of natural, social and human sciences (Dilthey)
- Methodological individualism (Weber)
- Relationship individual action and emergent societal structures (Hayek)
- Methodological atomism (Menger)

Behaviourism and methodological atomism

- Pavlov, Watson, Skinner:
  - Observable behavioural primitives
  - Smallest units of human interaction
  - Abstraction from:
    - The inner mind
    - The relational nature of the human self
    - The complexity of mind, self and society (G.H. Mead)

Machine learning: the issue of the proxies

- In ML we train an algorithm (the learner)
  - on a data set (whose distribution represents the ground truth that must be learnt)
  - to achieve a specified machine readable task (hoping to achieve a specific purpose)

- The data set is a proxy for the ground truth
- If labelled the labels are a proxy for real world features
- The target variable is a proxy for the purpose defined by human designer


SocArXiv Papers
Pagina: 1 van 26
Automatisch zoomen
©Mireille Hildebrandt, submitted to Frontiers of Artificial Intelligence,
section AI for Human Learning and Behavior Change
special issue 'Improving Human-Machine Feedback Loops in Social Networks'
The Issue of Proxies
And why EU law matters for recommender systems
Mireille Hildebrandt
Abstract
Recommendations are meant to increase sales or ad revenue, as these are the first priority of those who pay for them. As recommender systems match their recommendations with inferred preferences, we should not be surprised if the algorithm optimises for lucrative preferences and thus co-produces the preferences they mine. This relates to the well-known problem of feedback loops, filter bubbles and echo chambers. In this article I will discuss the implications of the fact that computing systems necessarily work with proxies when inferring recommendations and raise a number of questions about whether recommender systems actually do what they are claimed to do, while also analysing the often perverse economic incentive structures that have a major impact on relevant design decisions. Finally, I will explain how the GDPR and the proposed AI Act will help to break through various vicious circles, by constraining how people may be targeted (GDPR) and by requiring documented evidence of the robustness, resilience, reliability and the responsible design and use of high risk recommender systems (AI Act).
Keywords: micro-targeting, machine learning, behavioural profiling, political economy, behaviourism, Goodhart effect, choice architecture, affordance, capability

Machine learning, behaviourism and the issue of the proxies

- Behaviourism reverses the relationship between
  - a purpose (target variable that ‘proxies’ for the target concept/decision/behaviour)
  - and the proxies (training data, labelling feature variables)

- This is very convenient for the belief in AI systems, but
  - results in pseudo science

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Guest edited by Frank Pasquale (University of Maryland, Law), the special issue on New Economic Analysis of Law features illuminating syntheses of social science and law. What would law & economics look like if macro-, as opposed to micro-, economics were a primary concern of scholars? Do emerging online phenomena, such as algorithmic pricing and platform capitalism, promise to perfect economic theories of market equilibrium, or challenge their foundations? How did simplified economic models gain ideological power in policy circles, and how can they be improved or replaced? This issue highlights scholars whose work has made the legal academy mo than an "importer" of ideas from other disciplines—and who have, instead, shown that rigorous legal analysis is fundamental to understanding economic affairs.

Published: 2018-04-15

Special Issue: New Economic Analysis of Law

Law and Economics pp 27-55 | Cite as

The New Economic Analysis of Law: Legal Rules as Incentives

Authors | Authors and affiliations

Lewis A. Kornhauser

Chapter

3 Citations | 201 Downloads

Part of the Recent Economic Thought Series book series (RETH, volume 19)

Abstract

By general agreement, the new economic analysis of law began with the near-simultaneous publication roughly 25 years ago of "The Problem of Social Cost" [1] and "Some Thoughts on Risk Distribution and the Law of Torts" [2]. Though no one doubts the subsequent flourishing of the endeavor, many question its significance, and most cannot articulate its fundamental challenge to more traditional understandings and analyses of law. Frequently, critics have considered fundamental to economic analysis of law the claim either that the law *ought* to be or *was in fact* efficient. Occasionally, critics have dismissed the endeavor as obfuscation through the introduction of a new technical jargon and formal mathematical techniques into the verbal tangle of the law.

Keywords

Economic Analysis | Speed Limit | Legal Rule | Bargaining Game | Strict Liability

New Economic Analysis of Law

- The goal of private law is not to optimise for pareto efficient solutions
  - Pareto efficient solutions have problematic distributive effects
  - They depend on behaviourist assumptions that don't fly
  - They confuse proxies with what they stand for

- The goal of private law is not 'to help people make better decisions without forcing certain outcomes upon them' (assuming others know better)
  - The goal should be to provide a better choice architecture (capability theory)
    - For providers and users (how to design and deploy)
    - For affected natural persons (enhancing their agency)

New Economic Analysis of Law

We need to pay keen attention to:

- Harm at the level of individuals (fundamental rights infringements)
  - Compensation of identifiable individual harm (material, immaterial)
  - Prevention of individual harm (precautionary approach)

- Harm at the level of society (fundamental rights infringements)
  - Injunctive relief against potential infringement of fundamental rights
  - Collective action (mandating to dedicated NGOs; own standing NGOs)

New Economic Analysis of Law

- **EU Product liability**
  - EU legislation, incorporated in national law
    - mitigated strict liability
    - reversal of burden of proof
    - if damage, defect and causality is proven (by injured party)
      - manufacturer must pay compensation
      - unless they prove otherwise

New Economic Analysis of Law

- **EU Product liability**
  - To what extent does software fall within the scope of the Directive?
    - Uncertainty
    - AIA defines AI in terms of ‘AI systems’
    - Defined as specific types of software that generate outputs that affect its environment, base on human objectives
  - Liability for a ‘defect’ does not apply to software or firmware updates
    - a defect must be known or knowable at the moment the product is put on the internal market
    - AIA requires post market monitoring
    - Risks must be foreseen for use for intended purpose (including ML that keeps learning) and for ‘reasonable foreseeable misuse’ (ie for other purposes)

New Economic Analysis of Law

European Commission White Paper (2020, pre-AIA), focused on safety, proposes to:

1. update definition of product (include software)
2. reduce burden of proof wrt ‘defect’ (now depends on national law)
3. reduce or remove ‘later defect’ and ‘development risk’ defences tortfeasor
4. extend liability beyond ‘putting into circulation’
5. consider strict liability for damage caused by autonomous AI applications

New Economic Analysis of Law

What if we focus on risks to fundamental rights :

1. update definition of product (include software)
   - crucial
2. reduce burden of proof wrt ‘defect’ (now depends on national law)
   - reconsider definition of defect?
3. reduce or remove ‘later defect’ and ‘development risk’ defences tortfeasor
   - crucial
4. extend liability beyond ‘putting into circulation’
   - crucial
5. consider strict liability for damage caused by autonomous AI applications
   - crucial

New Economic Analysis of Law

What if we focus on risks to fundamental rights :

6. consider defining damage such that relevant impact is covered and/or:
7. Add the following rights to the AIA:
   A. The right not to be subject to prohibited AI practices
   B. The right to object to decisions made by high-risk AI systems
   C. The right to file an injunction in a court of law, and to mandate that right to an NGO in case one is subjected to prohibited AI practices or to decisions made by high-risk AI systems
   D. The right of dedicated NGOs to file an injunction in their own name with respect to the rights under A and B


THE END(S)