Tim O'Reilly

O'Reilly Media
@timoreilly
Open Source in the Age of Cloud AI

Tim O’Reilly
@timoreilly
oreilly.com
wtfecconomy.com

OSCON
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My love affair with open source

Photo: Esther Dyson
Losing the way of life,
Men rely on goodness.
Losing goodness,
They rely on laws.
Generosity
The Robustness Principle

“TCP implementations should follow a general principle of robustness: be conservative in what you do, be liberal in what you accept from others.”

Jon Postel, RFC 761

Photo: John Postel in his office, by Carl Malamud
This goodness flourished in despite of bad licenses (laws)

Despite having a proprietary license, and being owned by one company, Unix was developed collaboratively by small teams of independent developers.
An architecture of participation

“The book is perhaps most valuable for its exposition of the Unix philosophy of small cooperating tools with standardized inputs and outputs, a philosophy that also shaped the end-to-end philosophy of the Internet. It is this philosophy, and the architecture based on it, that has allowed open source projects to be assembled into larger systems such as Linux, without explicit coordination between developers.”
“I couldn’t have built a new kernel for Windows even if I had access to the source code. The architecture just didn’t support it.”

Linus Torvalds
Open source methodologies “won” because they were better adapted to the emerging world of network, protocol-oriented architectures, decentralized software development, and networked software distribution. They were aligned with “the way of life.”
But something changed…
"The Law of Conservation of Attractive Profits"

"When attractive profits disappear at one stage in the value chain because a product becomes modular and commoditized, the opportunity to earn attractive profits with proprietary products will usually emerge at an adjacent stage."

-- Clayton Christensen
Author of *The Innovator's Solution*
“When they hit the top of the S-curve, their relationships with network participants change from positive-sum to zero-sum. The easiest way to continue growing lies in extracting data from users and competing with complements over audiences and profits. Historical examples of this are Microsoft vs Netscape, Google vs Yelp, Facebook vs Zynga, and Twitter vs its 3rd-party clients. Operating systems like iOS and Android have behaved better, although still take a healthy 30% tax, reject apps for seemingly arbitrary reasons, and subsume the functionality of 3rd-party apps at will.”

- Chris Dixon, “Why Decentralization Matters”
Science
Curiosity, continuous learning by doing

Photo by David Fulmer.
MISSION

Artificial general intelligence (AGI) will be the most significant technology ever created by humans.

OpenAI's mission is to build safe AGI, and ensure AGI's benefits are as widely and evenly distributed as possible. We expect AI technologies to be hugely impactful in the short term, but their impact will be outstripped by that of the first AGIs.

We're a non-profit research company. Our full-time staff of 60 researchers and engineers is dedicated to working towards our mission regardless of the opportunities for selfish gain which arise along the way.

We focus on long-term research, working on problems that require us to make fundamental advances in AI capabilities.

By being at the forefront of the field, we can influence the conditions under which AGI is created. As Alan Kay said, "The best way to predict the future is to invent it."

We publish at top machine learning conferences, open-source software tools for accelerating AI research, and release blog posts to communicate our research. We will not keep information private for private benefit, but in the long term, we expect to create formal processes for keeping technologies private when there are safety concerns.
Conference on Fairness, Accountability, and Transparency (FAT*)

A multi-disciplinary conference that brings together researchers and practitioners interested in fairness, accountability, and transparency in socio-technical systems.

The Call for Papers for FAT* 2019 is now available! Abstract Pre-Registration Deadline is August 16, 2018. Location is Atlanta, Georgia.

Algorithmic systems are being adopted in a growing number of contexts. Fueled by big data, these systems filter, sort, score, recommend, personalize, and otherwise shape human experiences of socio-technical systems. Although these systems bring myriad benefits, they also contain inherent risks, such as codifying and entrenching biases; reducing accountability and hindering due process; and increasing the information asymmetry between data producers and data holders.

FAT* is an annual conference dedicating to bringing together a diverse community to investigate and tackle issues in this emerging area. Topics of interest include, but are not limited to:
Market Design

Markets are outcomes.

The algorithms decide “who gets what – and why”

A better designed marketplace can have better outcomes.

Who Gets What— and Why

ALVIN E. ROTH

Winner of the Nobel Prize in Economics
A driver in Houston just texted me. He drove for three hours last night and didn't make a single dollar.

Actually he *lost* $5.50.

This ride-sharing stuff is ridiculous for many drivers.

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8:00 last night

<table>
<thead>
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<th>95 miles x 5.35/mile</th>
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3.5 gallons of gas

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<td>$5.25</td>
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Net loss of $5.25
Generosity turns out to be a robust strategy
Google forgot that its strength was in the rich ecosystem of the open web, and began to compete with it, on the theory that only benefit to users matters. Conveniently, this also increases Google profits. Amazon too increasingly competes with its supplier ecosystem.
This looks like a replay of what Microsoft did to the PC.
Divergence of productivity and real median family income in the US

The benefits of increased productivity over the last 35 years have not gone to the middle class.

Productivity and real median family income growth, 1948-2014

Cumulative change

The same dynamics play out at the national level

Inclusive economies prosper.
Extractive economies falter.

Why do we incentivize extractive behavior?
What is “the way of life” for networked platforms and economies?

“The opportunity for AI is to help humans model and manage complex interacting systems.”

Paul R. Cohen
“Computational Sustainability is a new interdisciplinary research field, with the overarching goal of studying and providing solutions to computational problems for balancing environmental, economic, and societal needs for a sustainable future…. Work in Computational Sustainability integrates in a unique way various areas within computer science and applied mathematics, such as constraint reasoning, optimization, machine learning, and dynamical systems.”

Carla Gomes
The master algorithm asks for growth to go on forever.

It should be doing a better job of solving for...
“Doughnut Economics”

Kate Raworth
“If you want to teach people a new way of thinking, don't bother trying to teach them. Instead, give them a tool, the use of which will lead to new ways of thinking.”

Buckminster Fuller