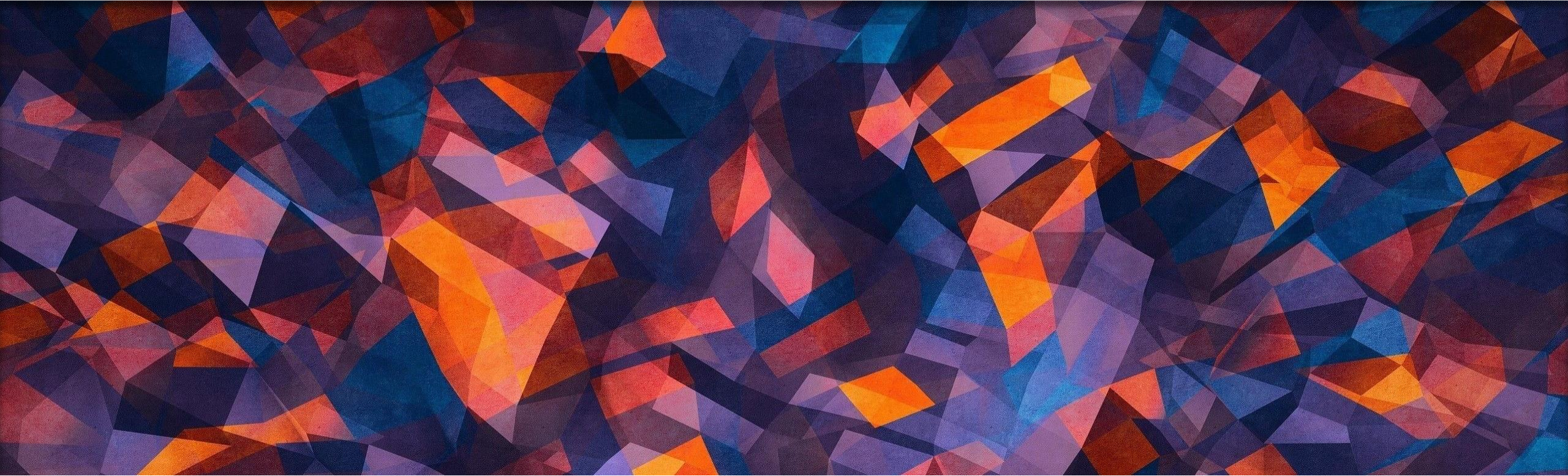




Universität St.Gallen



W3C WebAgents CG

Cognitive Stigmergy

Prof. Dr. Andrei Ciortea, Chair for Interaction- and Communication-based Systems (ICS-HSG)

Stigmergy in self-organizing multi-agent systems generally brings two biases [Ricci et al., 2007]:

- the agent model is assumed to be very simple, such as ant-like agents
- the environment model is often quite elementary, such as a pheromone infrastructure

Cognitive Stigmergy: Towards a Framework Based on Agents and Artifacts

Alessandro Ricci, Andrea Omicini, Mirko Viroli, Luca Gardelli,
and Enrico Oliva

ALMA MATER STUDIORUM—Università di Bologna
via Venezia 52, 47023 Cesena, Italy

a.ricci@unibo.it, andrea.omicini@unibo.it, mirko.viroli@deis.unibo.it,
luca.gardelli@unibo.it, enrico.oliva@unibo.it

Abstract. *Stigmergy* has been adopted in MAS (multi-agent systems) and in other fields as a technique for realising forms of emergent co-ordination in societies composed by a large amount of ant-like, non-

How can **stigmergy** be transposed in
systems of **cognitive agents**?

Artifacts as enablers for stigmergy

Workspaces capture locality

From pheromones to **annotations**:

- annotations hold a **symbolic value** referring to some **ontology**
- can be both **intentional** (created by agents) or **unintentional** (created by artifacts)

“Trails” of Cognitive Stigmergy on the Web

Promote awareness of others' activity

Some are **unintentional**, others are **intentional**

Useful both for **people** and **artificial agents**

Verified Artist

Hans Zimmer

8,244,078 monthly listeners

Usage Metrics

Swarmanoid, the movie

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Product/Service Ratings

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★★★★☆ 4.4 out of 5

12,120 global ratings

5 star 63%

4 star 24%

3 star 10%

2 star 2%

1 star 1%

★ 4.67 · 6 reviews

Cleanliness 4.3

Communication 5.0

Check-in 4.8

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Pebble: E-Paper Watch for iPhone and Android

66,359 backers

\$10,166,362 pledged of \$100,000 goal

8 days to go

medium.com

Why Pebble failed

We launched Pebble on Kickstarter 10 years ago today! It was an amazing ride and I learned a lot from the experience. Story time...

Aggregation, Difussion, Ordering, Selection

Y Combinator @ycombinator · 25

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INDOOR SKYDIVING SWISS CHAMPIONSHIPS 2022 FINALS

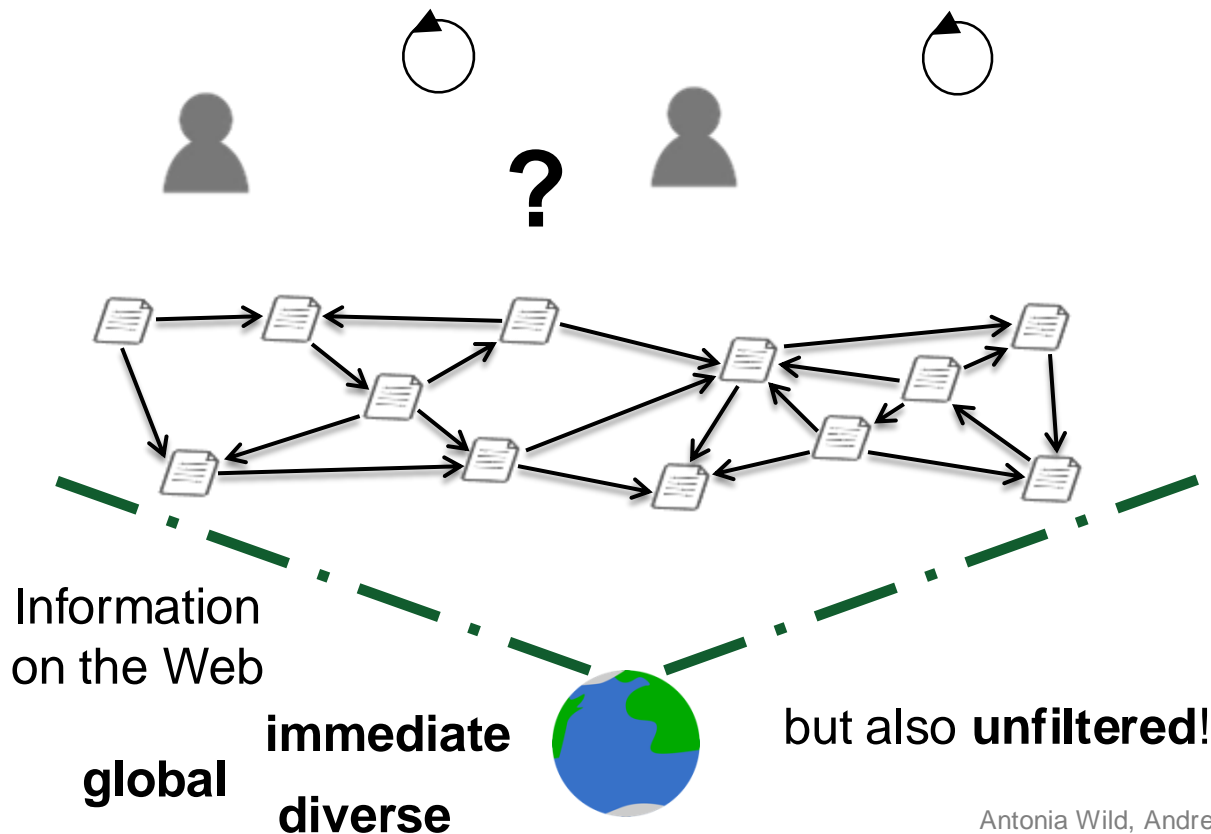
19 Likes 2 Shares

Etc...

Case Study: Tackling Online Disinformation

Credibility analysis of online information is hard

- automated fact-checking can **scale** but **lacks accuracy**
- manual fact-checking is more **accurate** but **lacks scale**

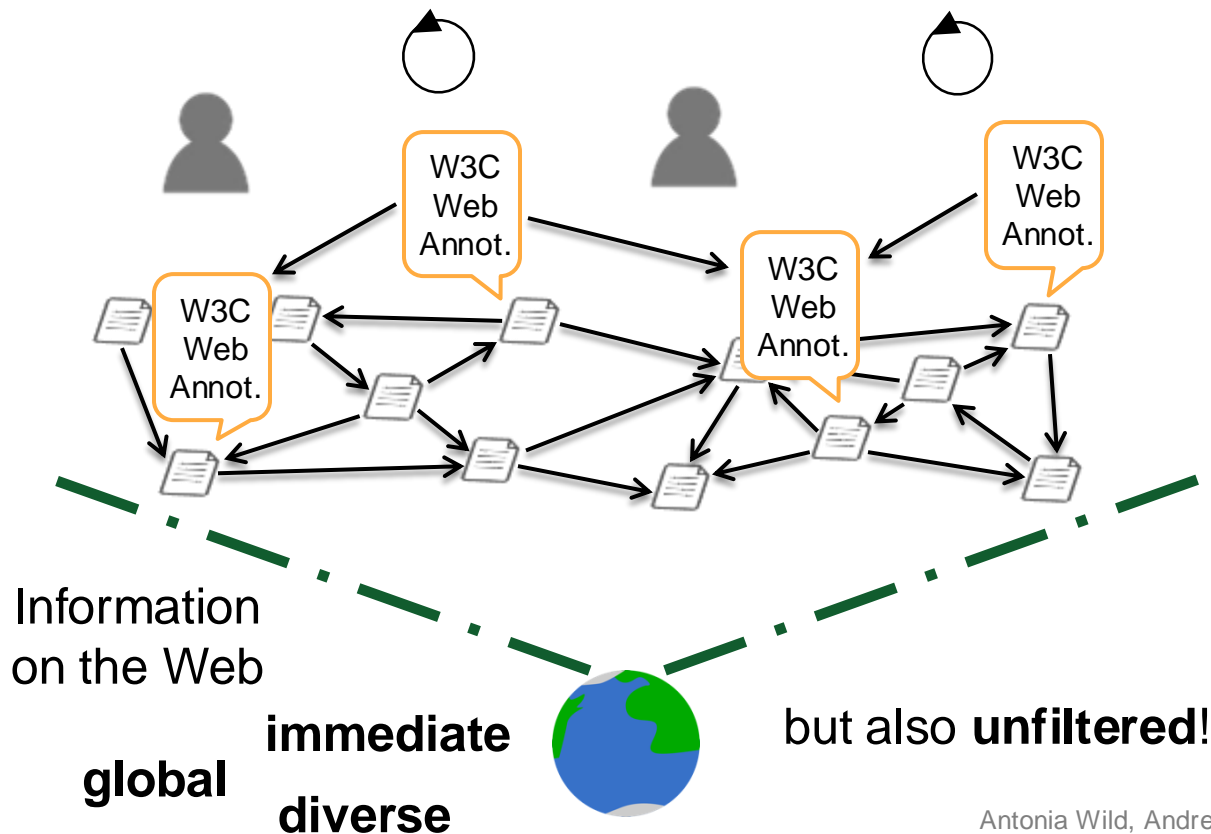


<https://euvdsdisinfo.eu/>

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W3C Web Annotations: transparency **at source** on the **open Web**

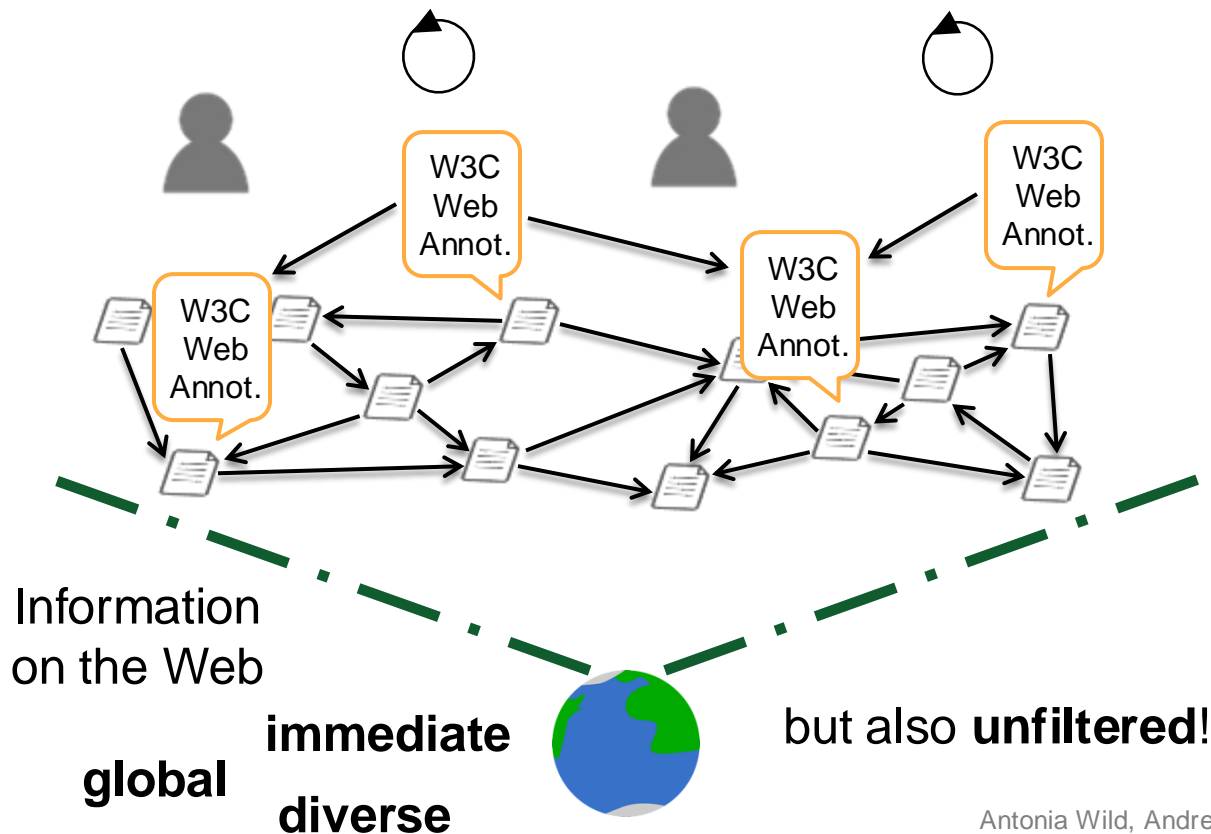


Antonia Wild, Andrei Ciortea, and Simon Mayer. Designing Social Machines for Tackling Online Disinformation, DecentWeb 2020.
W3C Web Annotation Working Group: <https://www.w3.org/annotation/>; W3C CredWeb Community Group: <https://www.w3.org/community/credibility/>

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W3C Web Annotations: transparency **at source** on the **open Web**

Fact-checking workflows defined by experts



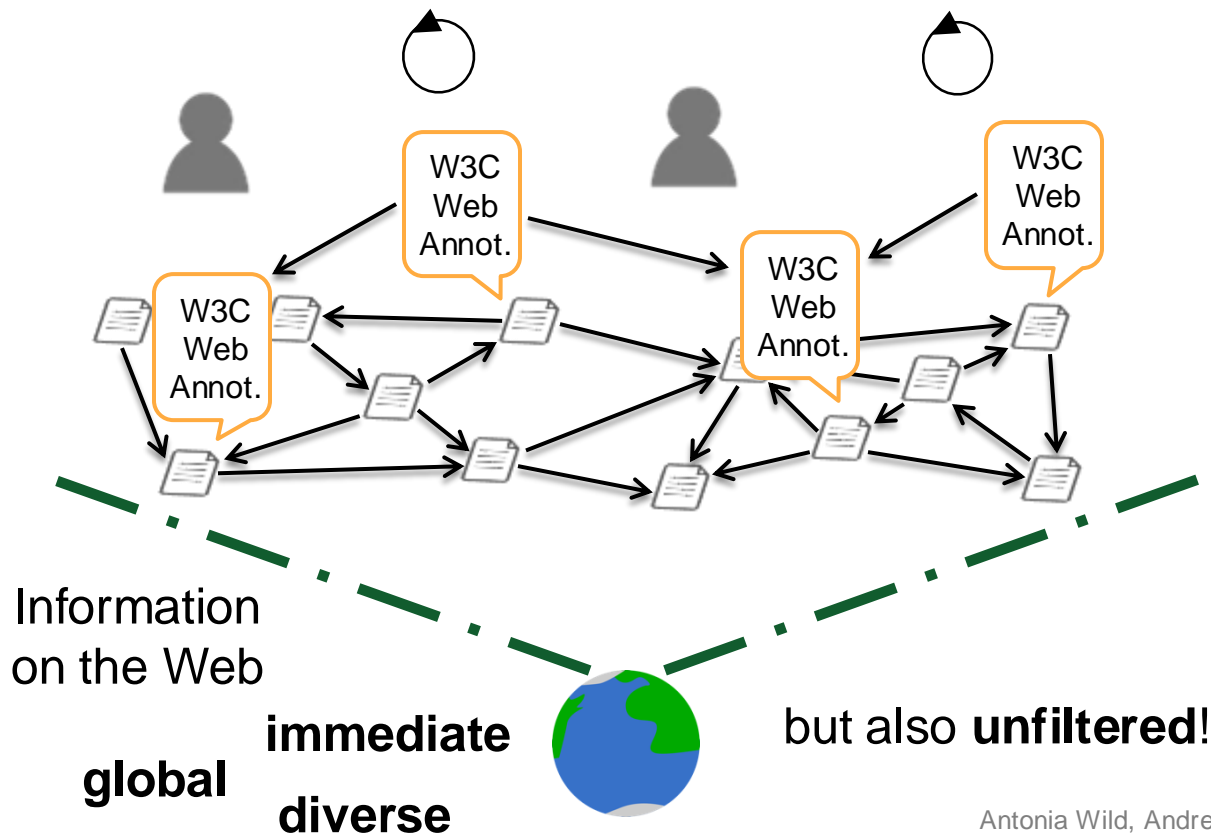
What's missing: designing organizations of people and artificial agents to implement fact-checking workflows
— and deploying them **at scale!**

Antonia Wild, Andrei Ciortea, and Simon Mayer. Designing Social Machines for Tackling Online Disinformation, DecentWeb 2020.
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Designing Social Machines for Tackling Online Disinformation

Antonia Wild
University of St. Gallen
St. Gallen, Switzerland
antonia.wild@student.unisg.ch

Andrei Ciortea
University of St. Gallen
St. Gallen, Switzerland
Inria, Université Côte d'Azur, CNRS
Sophia Antipolis, France
andrei.ciortea@unisg.ch

Simon Mayer
University of St. Gallen
and ETH Zürich
St. Gallen, Switzerland
simon.mayer@unisg.ch

ABSTRACT

Traditional news outlets as carriers and distributors of information have been challenged by online social networks with regards to their gate-keeping function. We believe that only a combined effort

Web - and envisioned the use of annotations as a suitable mechanism.³ Such Web Annotations, now a W3C Recommendation [16], construct a metadata layer on top of existing resources and without requiring their modification. As such, they can be regarded as a con-

Any Questions / Comments / Doubts / Concerns?



<https://www.istockphoto.com/>

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<http://www.wikipedia.com>