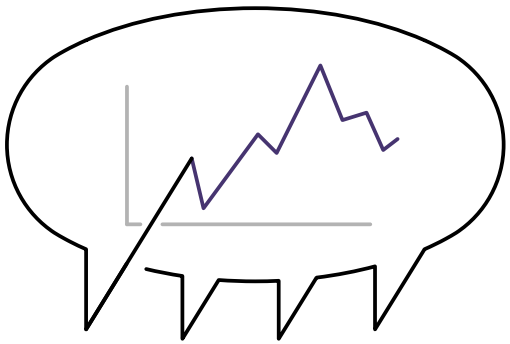
Computer-supported Cooperative Work and Social Computing

CSE510 Guest Lecture



Community
Data Science
Collective

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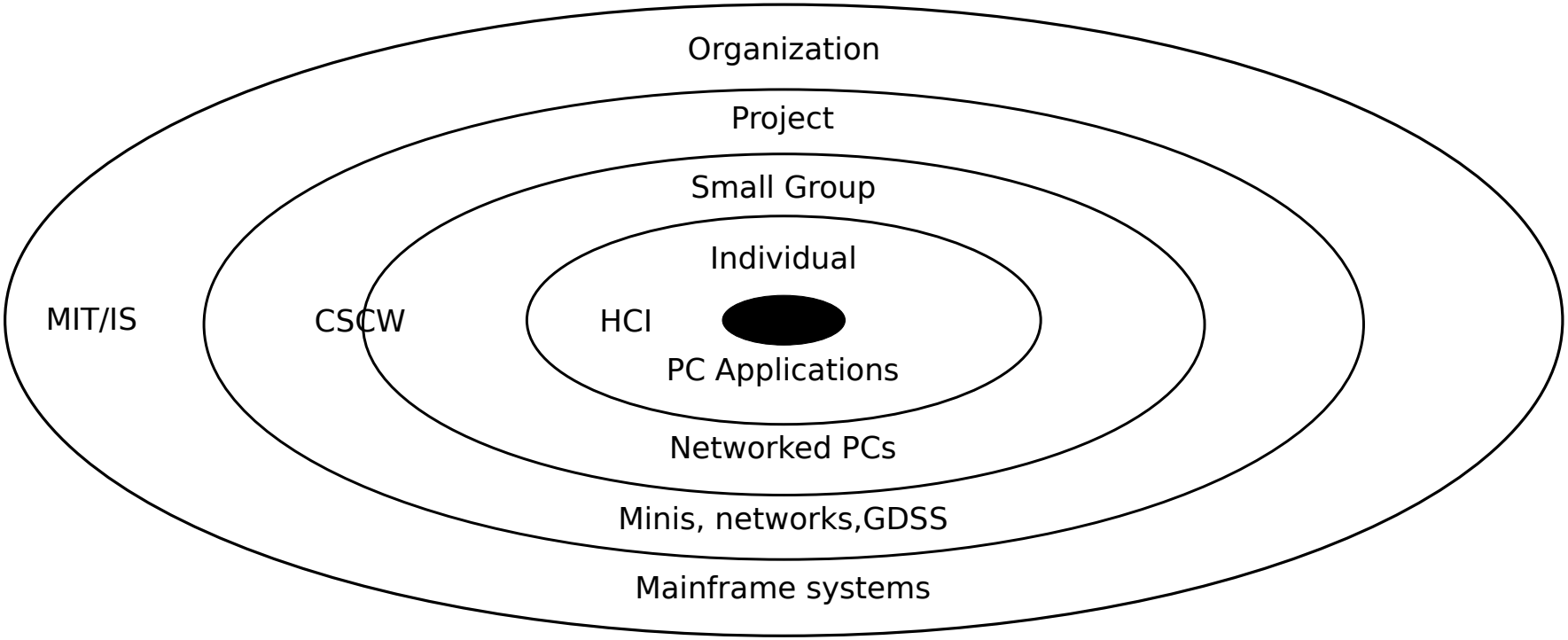
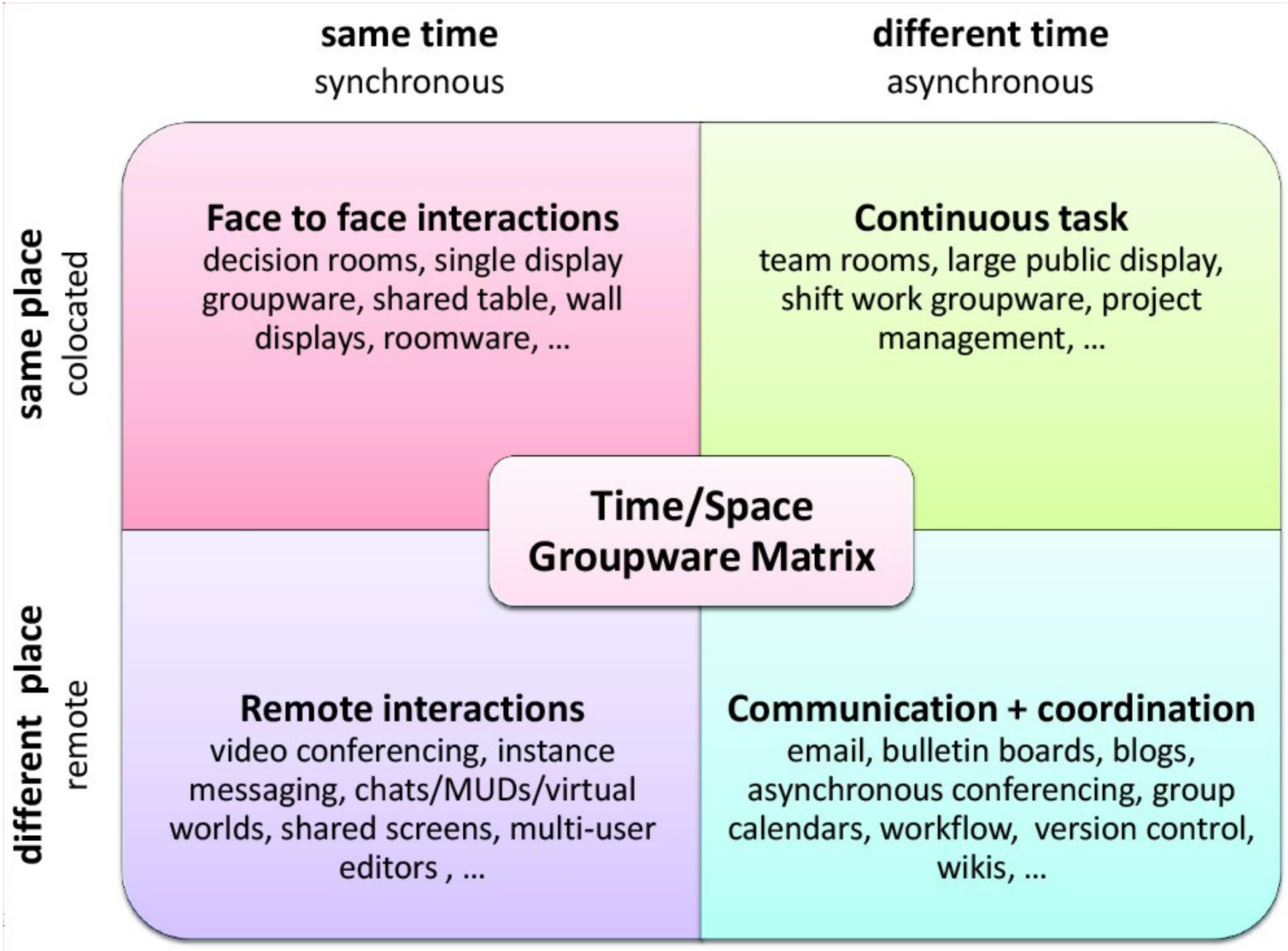
revision: 7682455 (2016/02/23)

I. Mapping Computer-supported Cooperative Work

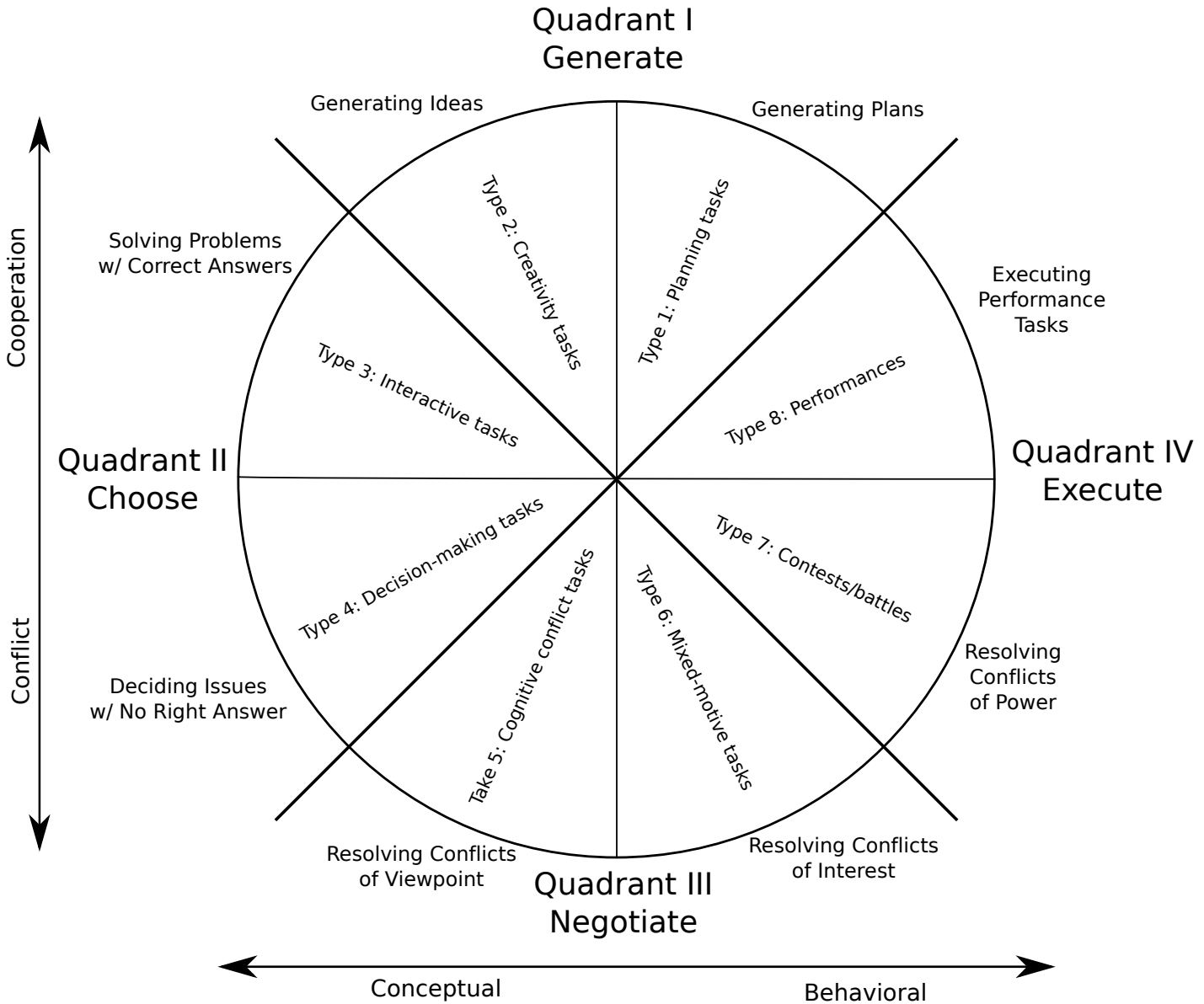


Grudin (1994a, b) showing “development and research contexts” in the academic study of computer use in computer science. On the left side are the sub-fields or research streams in computer science. On the top are the types of user being served. On the bottom are the types of products being produced.



[Johansen (1988); Baecker (1995); image from Wikimedia Commons]

Typologies of Tasks



[McGrath 1984]

II. Classic Approaches to CSCW

Syllabus from MIT 16.499 (Circa 2005)

- Group Interaction Theory: Theories in Verbal Communication & Non-Verbal Communication
- Group Interaction Theory: **Distributed Cognition**
- Group Interaction Theory: **Activity Theory**
- Methodologies for Studying Groups & CSCW Technologies: Intro and Quantitative Approaches
- Methodologies for Studying Groups & CSCW Technologies: Qualitative Approaches
- Techniques for Modeling Group Interactions
- **Awareness** in Collaboration: Intro & Workspace **Awareness**
- **Awareness** in Collaboration: Team Situation **Awareness**
- Design Considerations for CSCW Technologies Computer Support for Co-located Collaboration Computer Support for Distributed Collaboration

Distributed Cognition

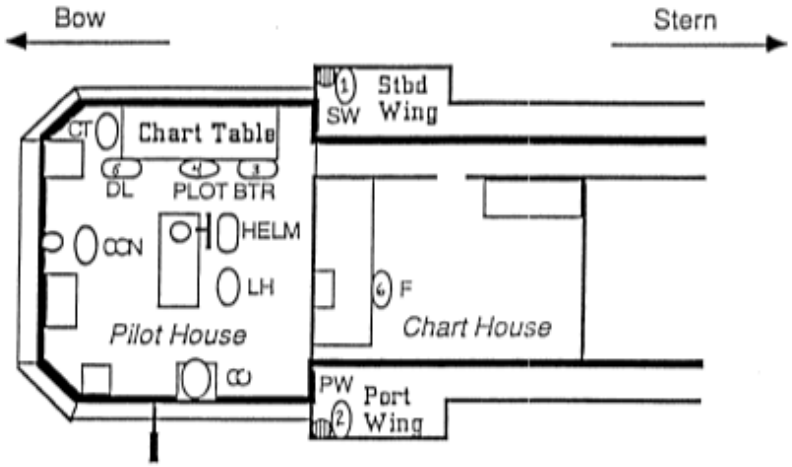


FIG. 8.1. Watchstander positions for sea and anchor detail.

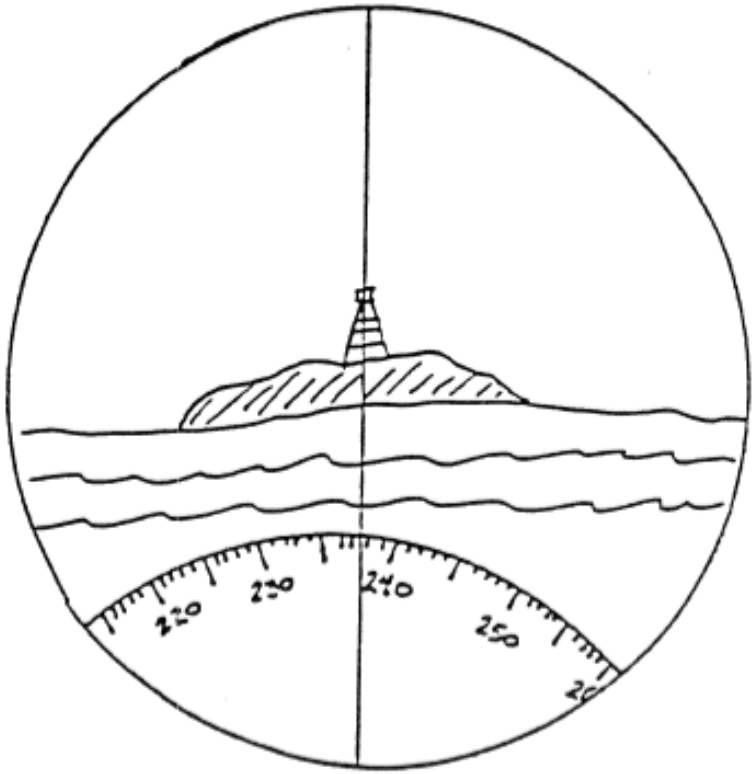
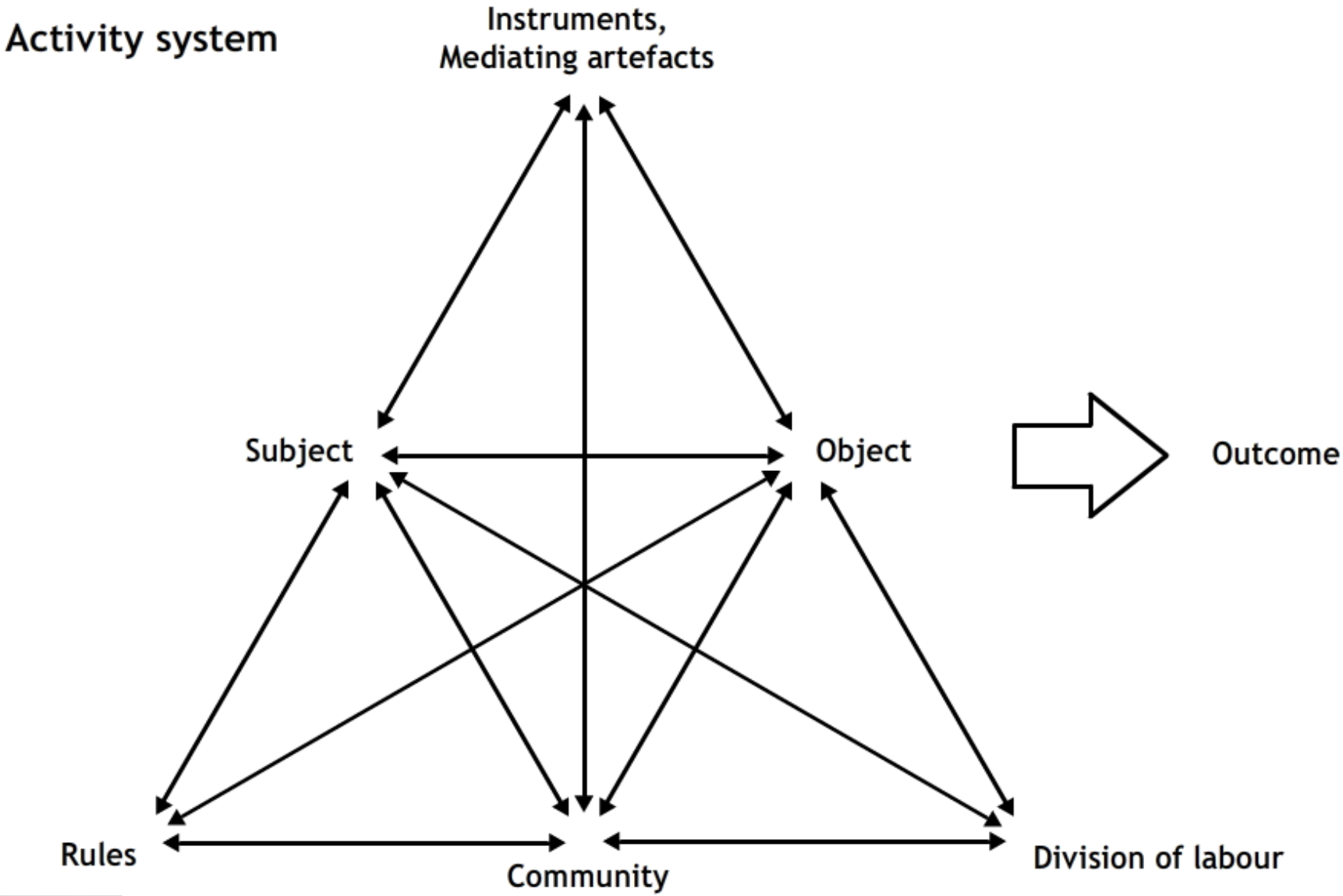


FIG. 8.2. View of a landmark with gyrocompass scale superimposed.

[Hutchins (1990): Technology of Team Navigation]

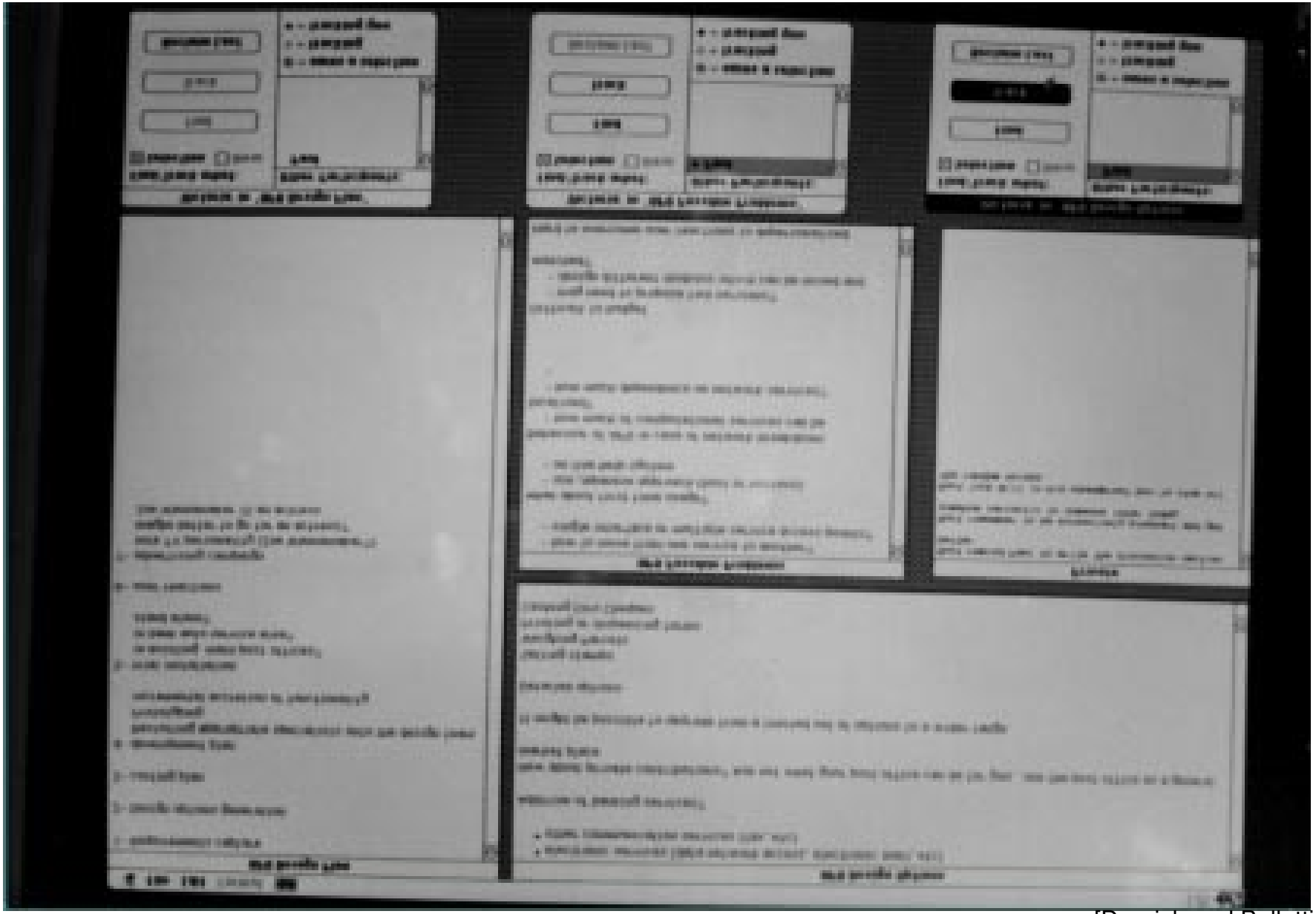
Activity Theory



© Matt Bury 2012

[e.g., Nardi 1995: *Context and Consciousness: Activity Theory and Human-Computer Interaction*]

Awareness (Synchronous)



[Dourish and Bellotti (1992)]

Awareness (Asynchronous)

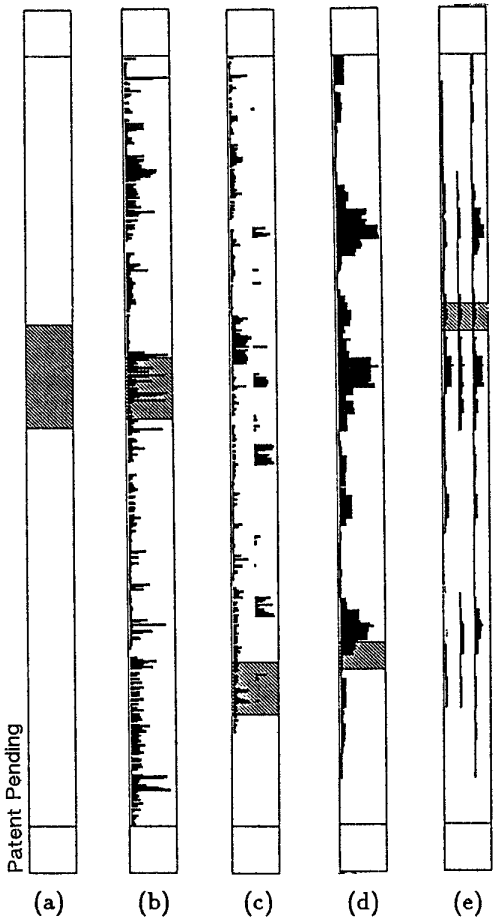


Figure 1. Five Sample Scroll Bars

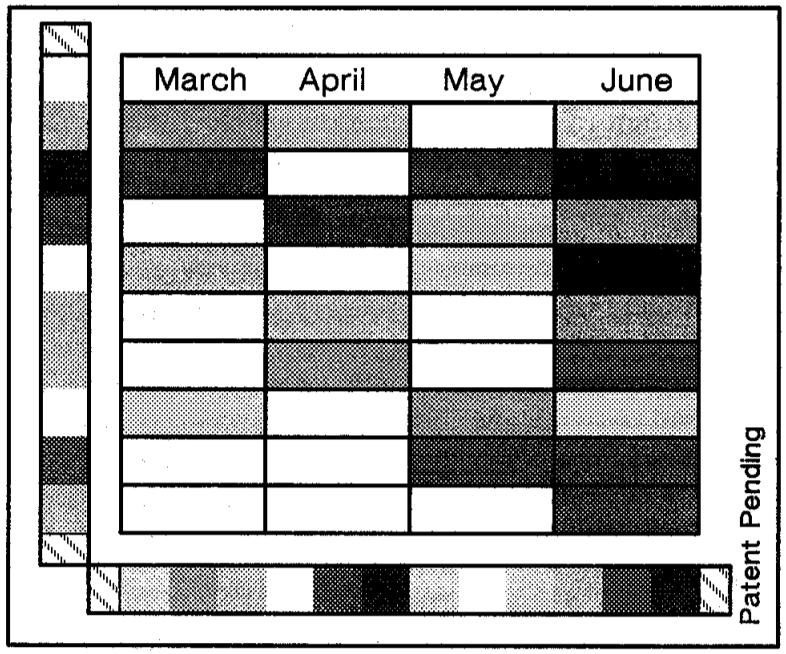
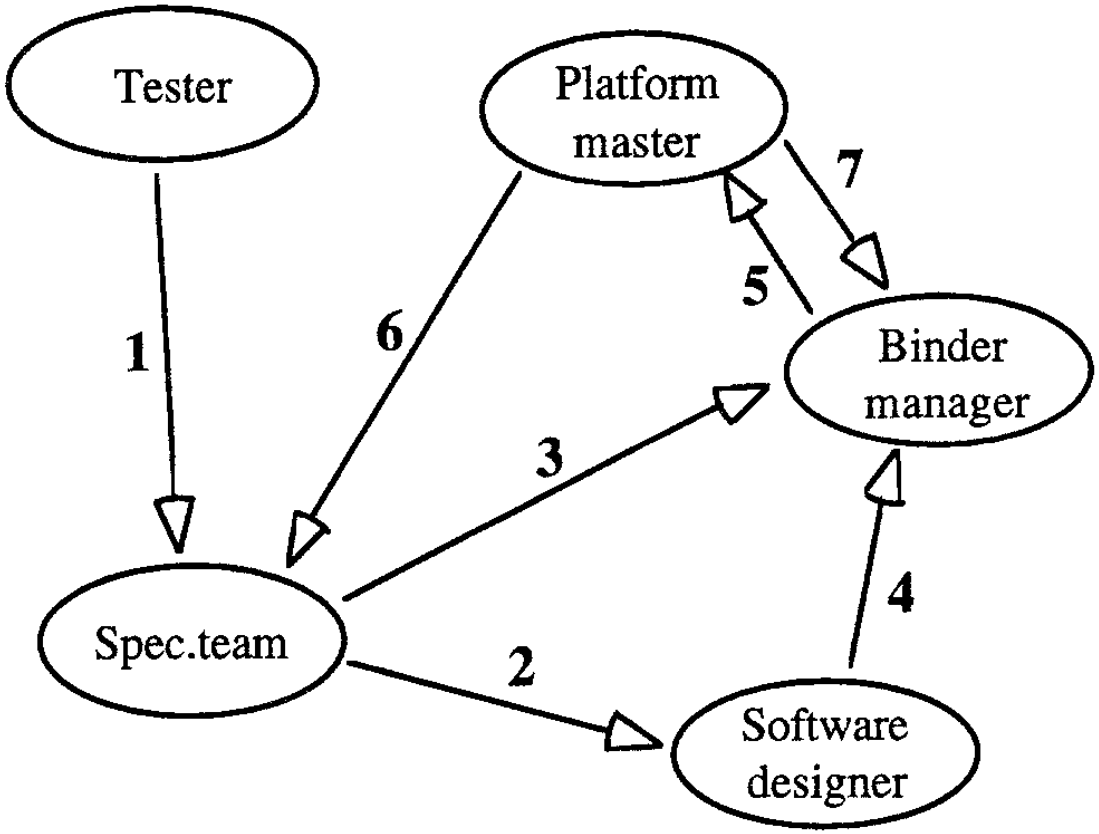


Figure 3. Mockup of Spread Sheet Wear

[Hill et al. CHI'92: "EditWear and Readwear"]

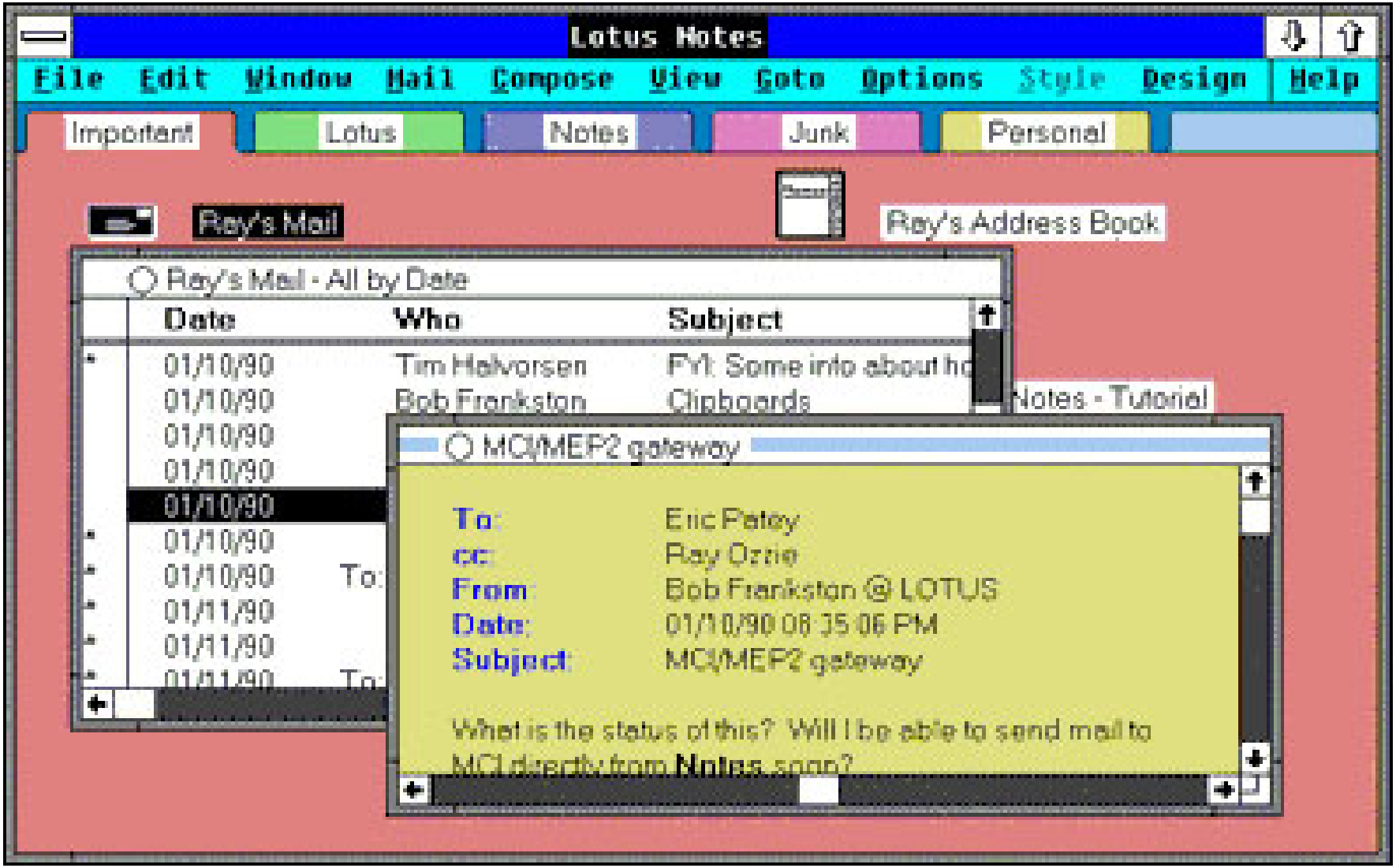
Coordination



A schematic illustration of the roles and information flows in software testing in the S4000 project. The flows in the diagram indicate the intended flow according to the bug handling protocol.

[Schmidt and Simone (1996); Malone and Crowston (CSCW'92)]

Organization and Social Structure

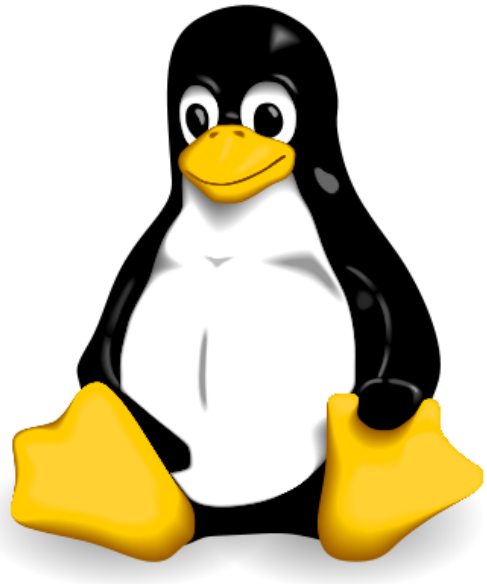


[Orikowski 1992: “Learning from Notes”]

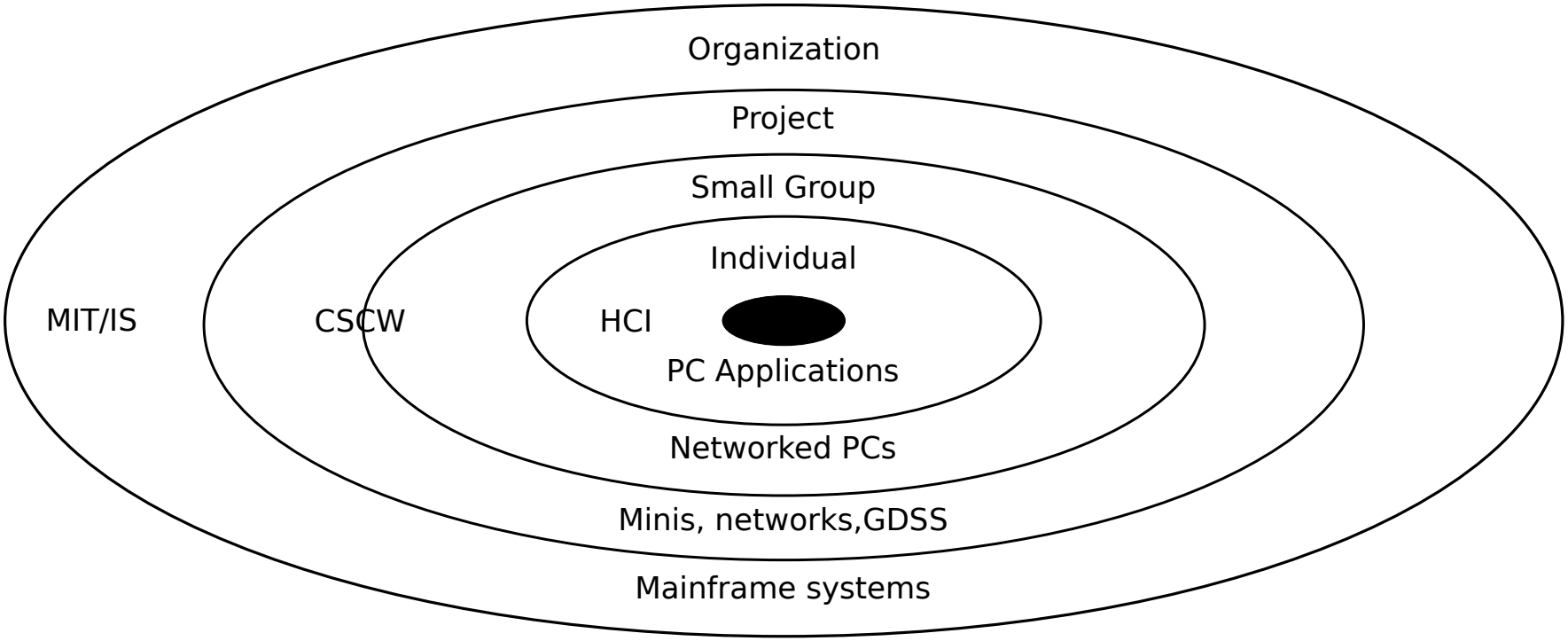
II. Social Computing and Peer Production

Peer Production

New modes of **collective production** made possible by lowered transaction costs through new communication technologies. (Benkler 2003, 2006)



Peer Production?



It's not particularly obvious where peer production would fit. It's certainly not obvious that it fit within traditional CSCW spaces.

Peer Production in CSCW

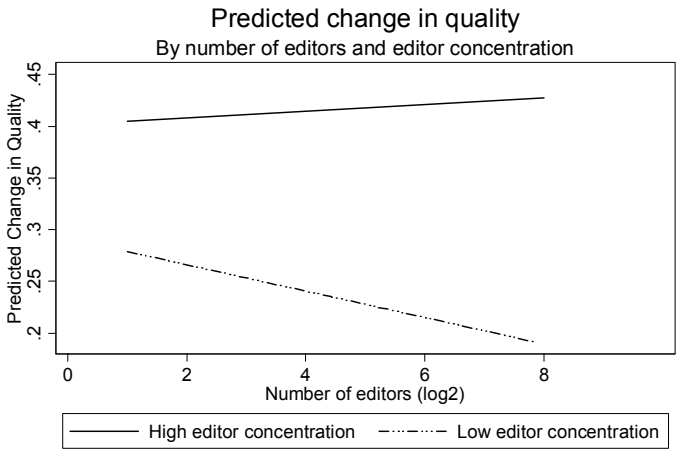


Figure 4. Joint influence of number and concentration of editors on changes in quality.

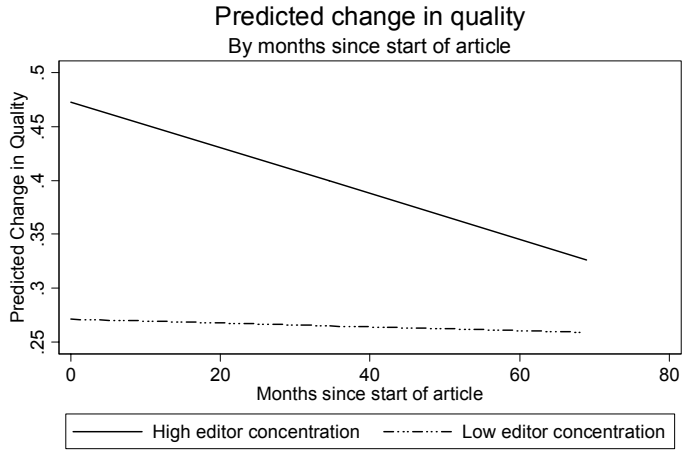


Figure 5. Joint influence of article age and concentration of editors on changes in quality.

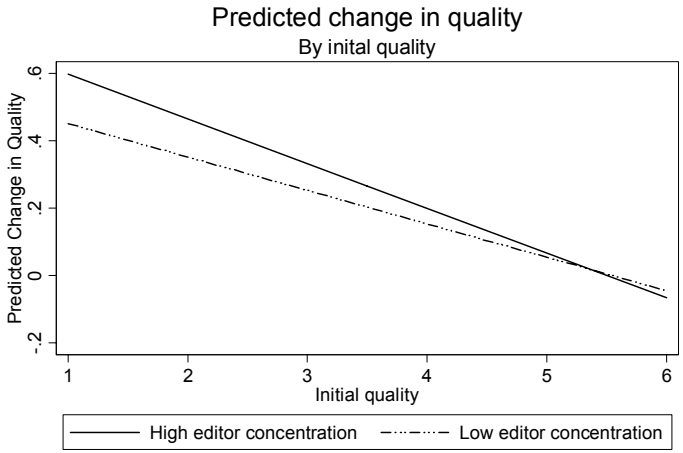


Figure 6. Joint influence of initial quality and concentration of editors on changes in quality.

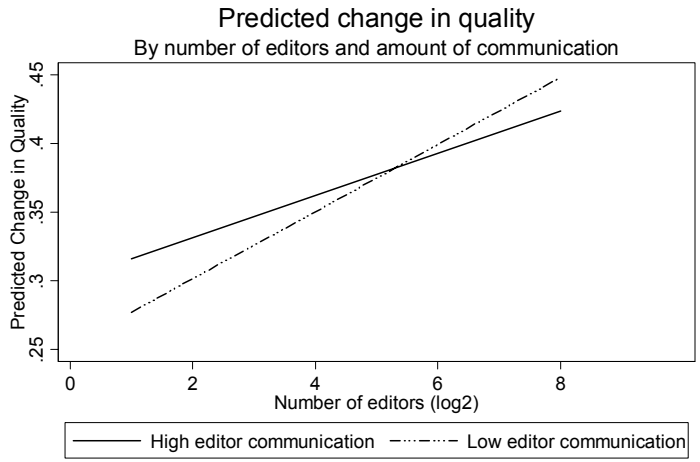
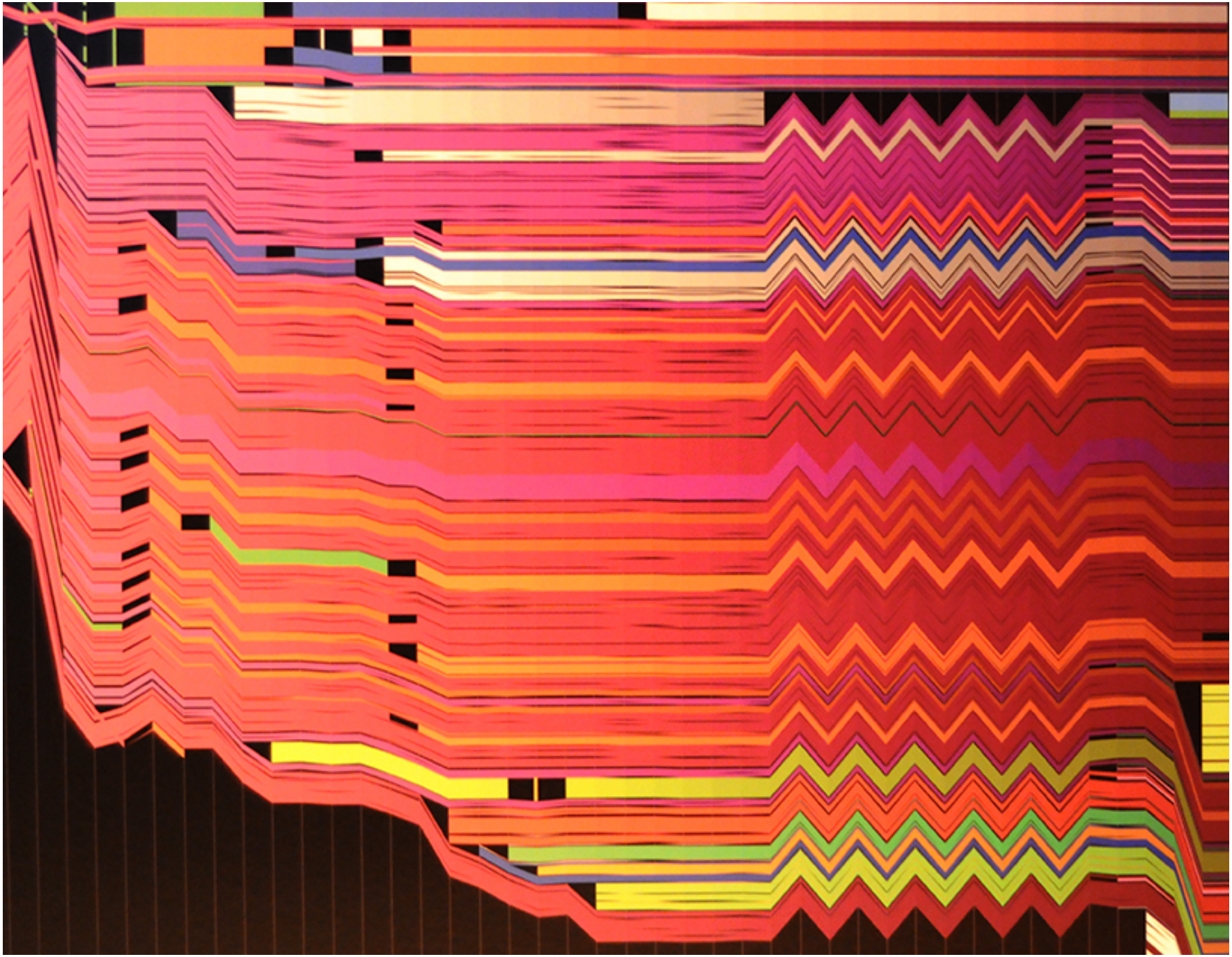


Figure 7. Joint influence of number of editors and communication on changes in quality.

[Kittur and Kraut CSCW'2008]



[Viégas et al. CHI'2004: HistoryFlow]

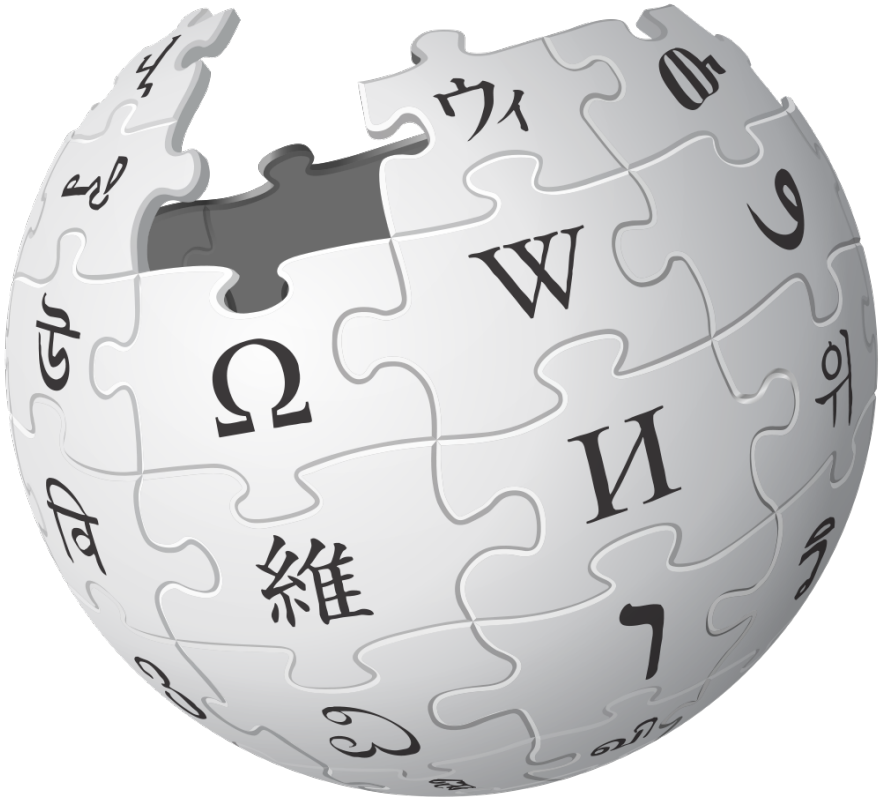
IV. My Peer Production Research

Almost Wikipedia

Citation

Hill, Benjamin Mako. (2013) “Almost Wikipedia: Eight Early Encyclopedia Projects and the Mechanisms of Collective Action.” In *Essays on Volunteer Mobilization in Peer Production*. Doctoral Dissertation. Massachusetts Institute of Technology.

Why Wikipedia?



Instead of...

TheInfoNetwork

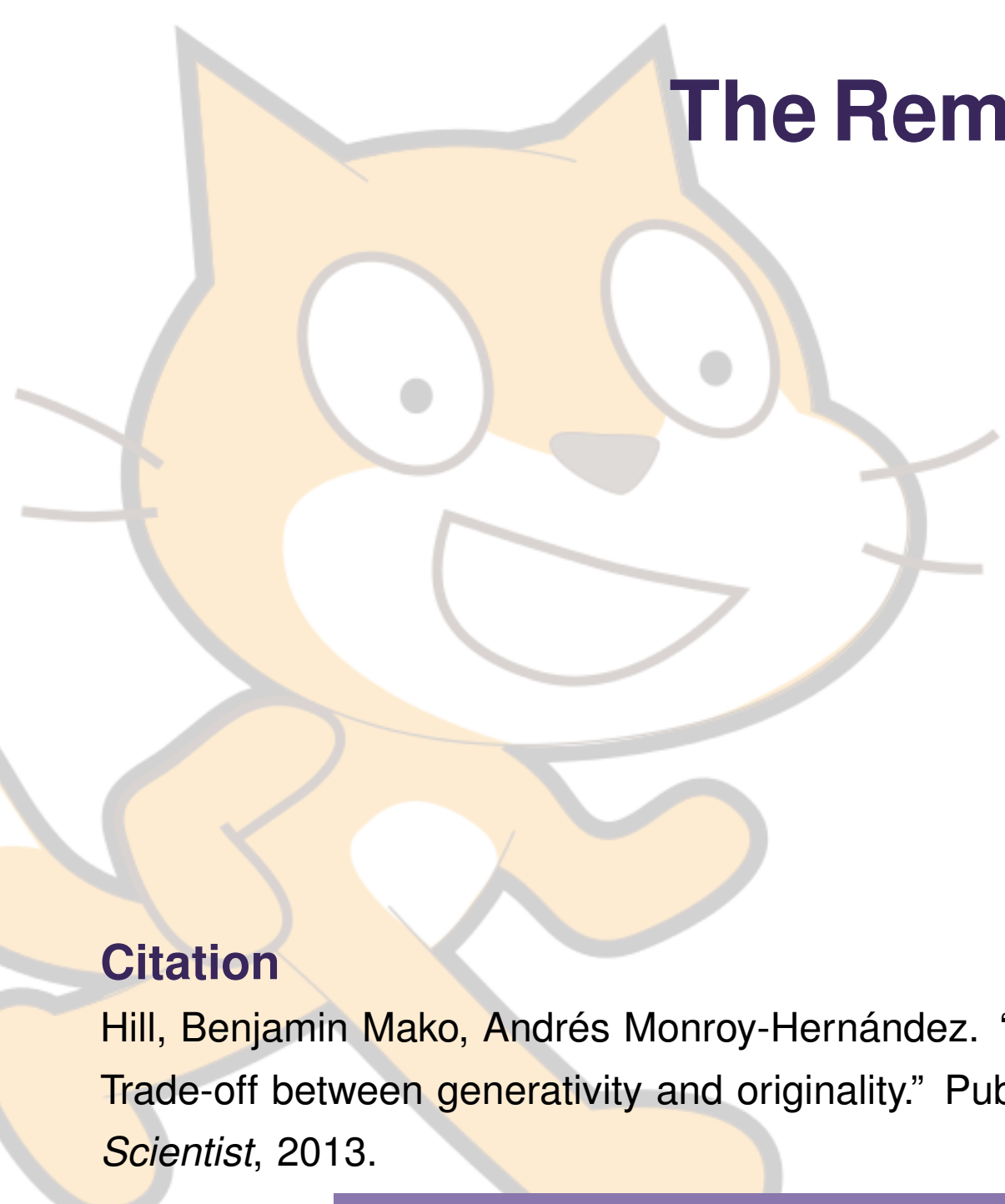
h2g2

GNE

Synthesis

Innovativeness of Process/Tools	Innovativeness of Goal/Product: Familiar	Innovativeness of Goal/Product: Novel
Familiar	Traditional products using traditional methods and tools. *"Like Encylopedia Britannica — just online and free."*	New products using traditional methods and tools. *"A new type of encyclopedia, but produced like the old ones."*
Novel	Traditional products using new methods and tools. *"Like Encyclopedia Britannica, but produced in a radically new way."*	New products using novel methods and tools. *"A new type of encyclopedia produced in a radically new way."*

The Remixing Dilemma



Citation

Hill, Benjamin Mako, Andrés Monroy-Hernández. "The Remixing Dilemma: The Trade-off between generativity and originality." Published in *American Behavioral Scientist*, 2013.

Remixing

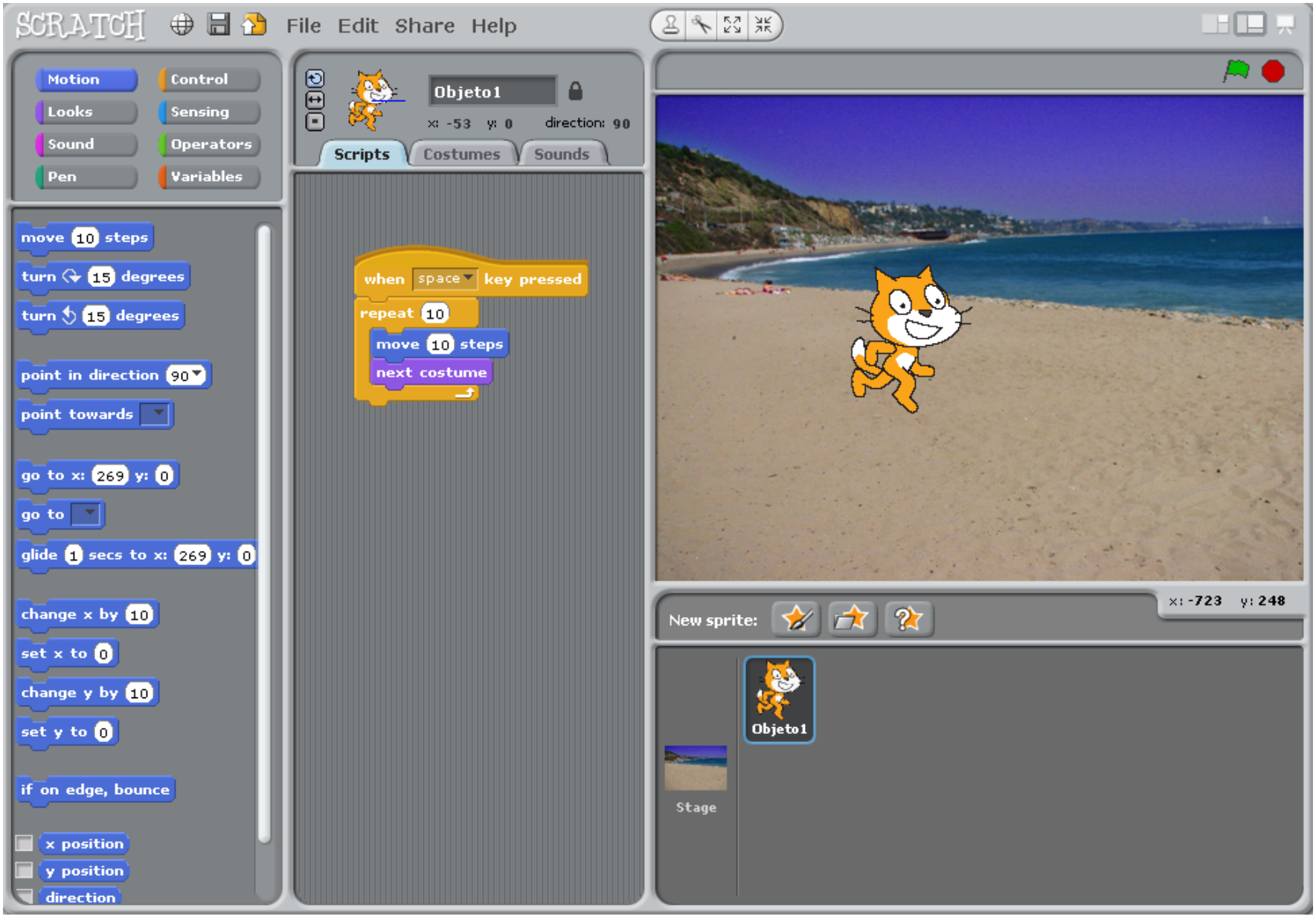
The **reworking and recombination** of existing creative artifacts.

Most commonly in reference to music, video, and interactive media.

- **Widespread**, and an **important** new communication modality (e.g., Manovich 2005; Lessig 2009)
- Especially among use **youth** (Jenkins 2006; Palfrey and Gasser 2008)

Research Questions

- What qualities of Scratch projects and their creators are associated with more **generative** projects?
- What qualities are associated with more **original** remixing? (e.g., Keen 2007; Lanier 2010)



(Resnick et al. 2009)

Neo

kuri shared it 2 years, 4 months ago

Some rights reserved

7125 views, 26 taggers, 393 people love it, 9 remixes by 7 people, 1433 downloads, in 72 galleries

Download this project!

Download the 27 sprites and 176 scripts of "Neo" and open it in Scratch

Project Notes

The instructions are in the game
Post your high score and difficulty level!

And please post a love it!
becuase i will make more games if you do!

UPDATE: added ship customization!

UPADTE: added a boss on level nine!

Tags

game
animation
art
cool

star wars: Republican Gunship

pandadark shared it 1 year, 7 months ago

Some rights reserved

Based on kuri's project

38 views, 3 people love it, 4 downloads, in 1 gallery

Love it? Add to my favorites? Flag as inappropriate?

Download this project!

Download the 27 sprites and 177 scripts of "star wars: Republica..." and open it in Scratch

Project Notes

The instructions are in the game
Post your high score and difficulty level!

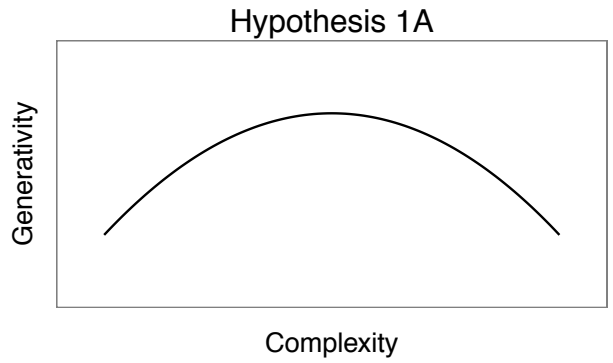
And please post a love it! becuase i will make more games if you do!

UPDATE: added ship customization!

Sorry if this offends you kuri. I look up to you. my version of neo, you'll understand if you're the average american.----------I'm a democrat so I Love this game

Results (RQ1)

Testing Theories of Generativity



Ceteris paribus (including exposure)...

1A) After a threshold is reached, **simpler projects** are more generative, because they are more likely to be incomplete and to invite elaboration.

- "Release early, release often" (Raymond 1999)
- Principle of procrastination (Zittrain 2008)

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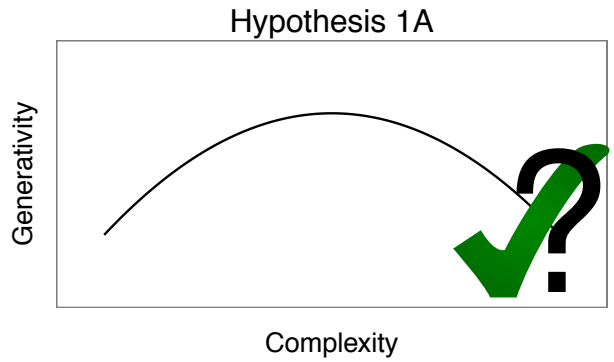

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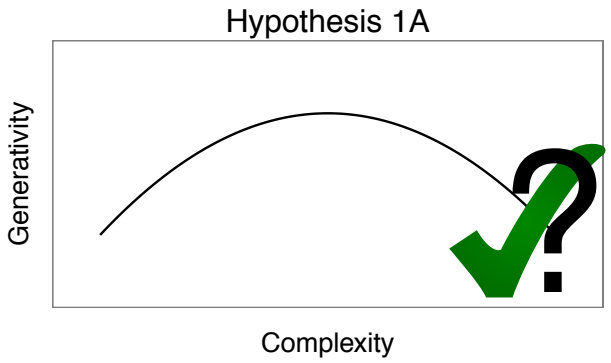
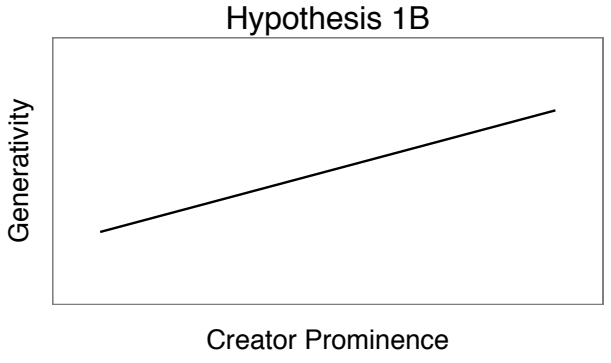


1B) Remixing relies on common reference points making the work of more prominent creators more generative.

- (Sinnreich 2010; Cheliotis and Yew, 2009)



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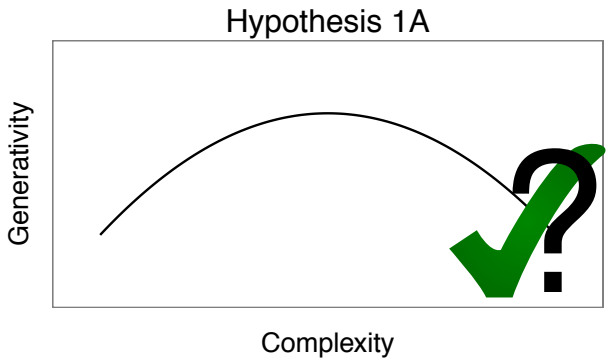

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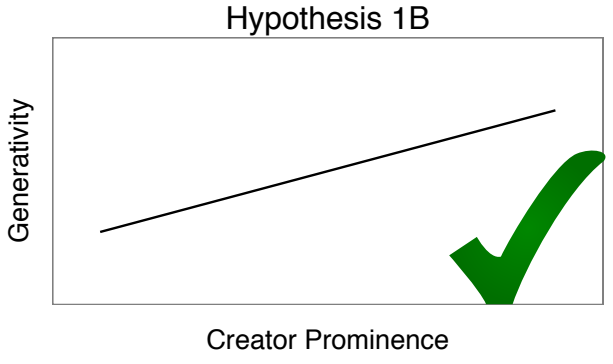

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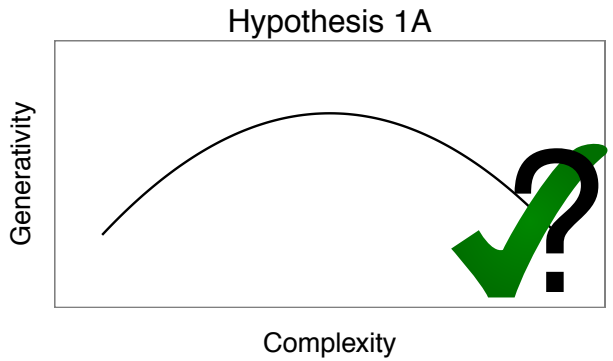

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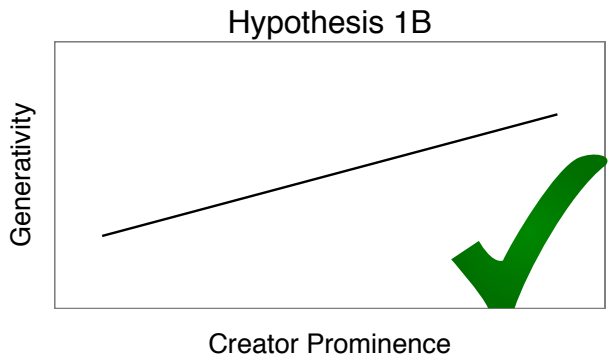
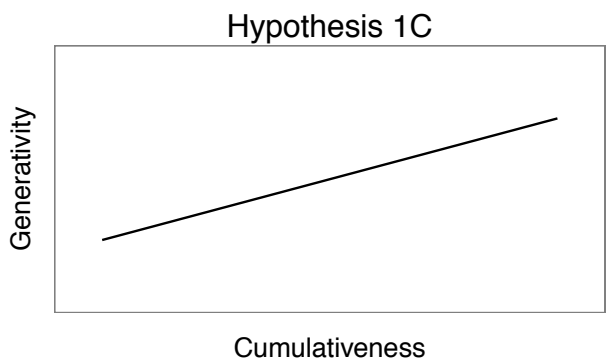


1C) Remixing involves elaboration and iteration making works that are remixes themselves more generative than de novo projects.

- (Murray and O'Mahoney 2007; Cheliotis and Yew, 2009)



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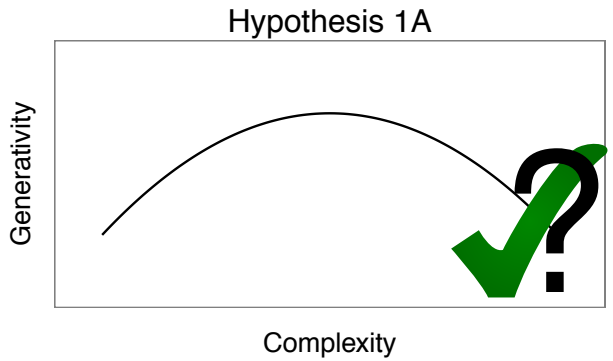

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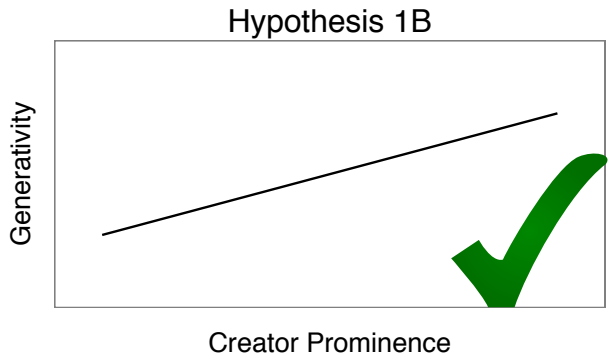

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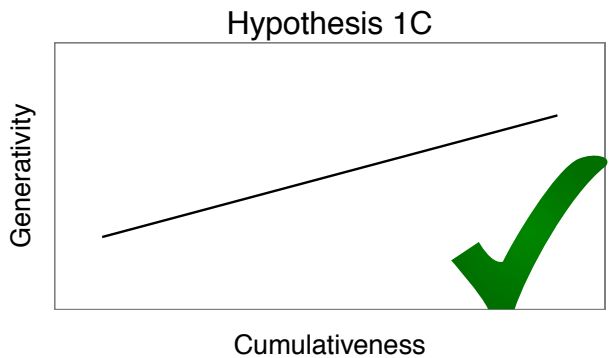

Results (RQ2)

Testing Theories of Originality

But we also care about the **originality** of resulting remixes. (Keen 2007; Lanier 2010)

2A-C) The Remixing Dilemma:

> *Attracting more remixers will result in less skilled, and/or less motivated, remixers who will, ceteris paribus, **remix projects less originally**.*

Results (RQ2)

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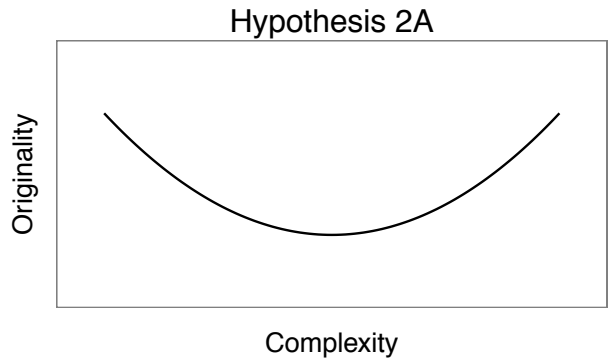

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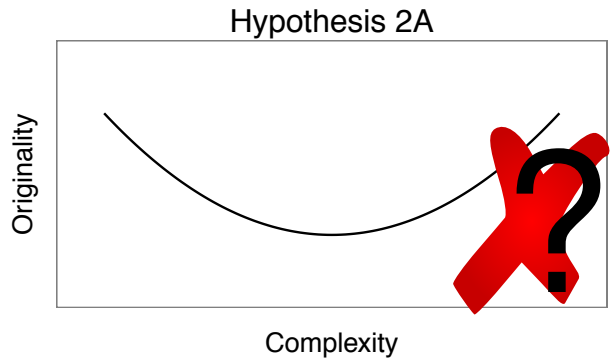

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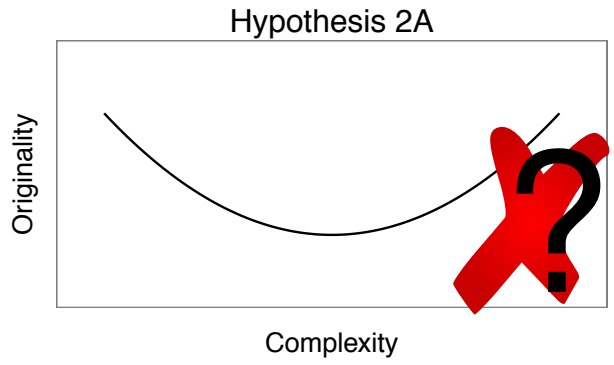

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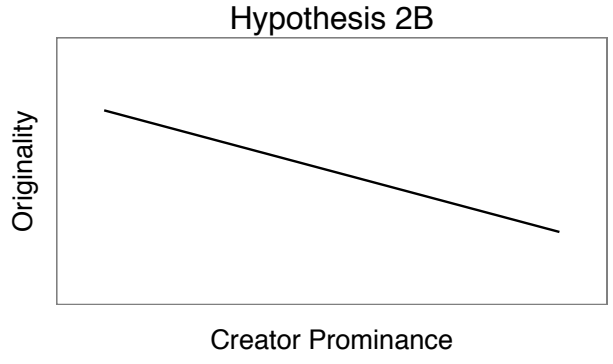

- 2A: Zittrain 2008
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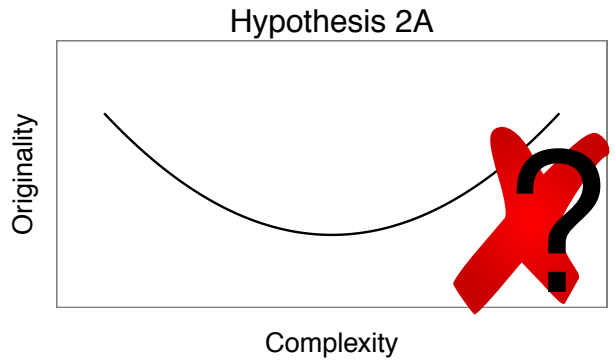
Results (RQ2)

Testing Theories of Originality



But we also care about the **originality** of resulting remixes. (Keen 2007; Lanier 2010)

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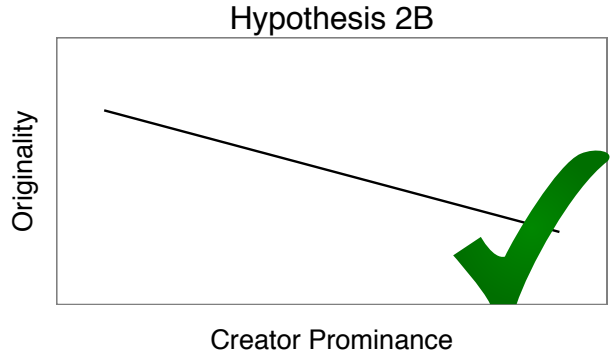

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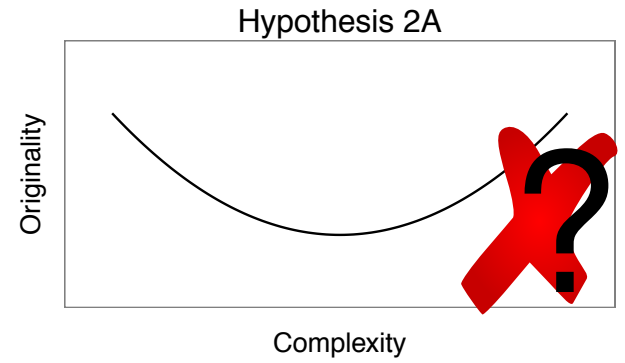

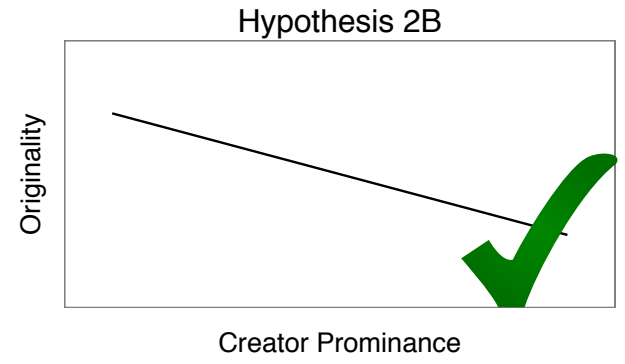

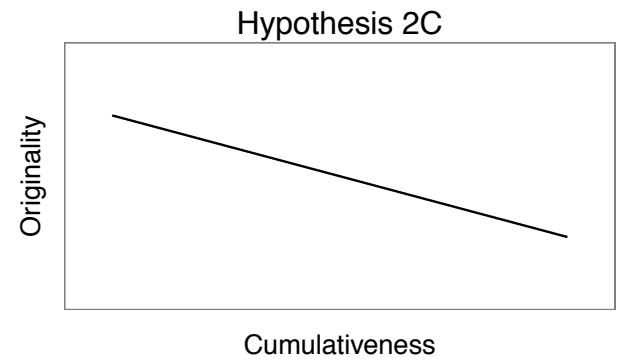

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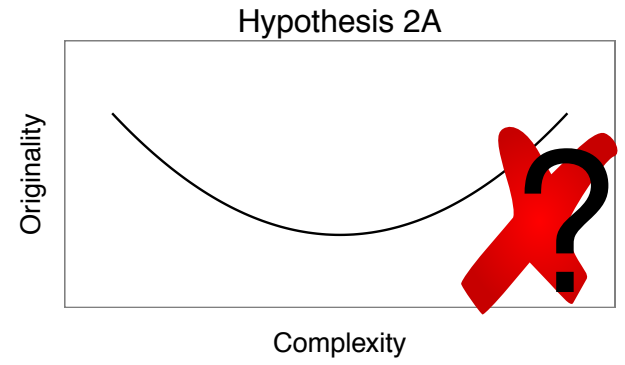

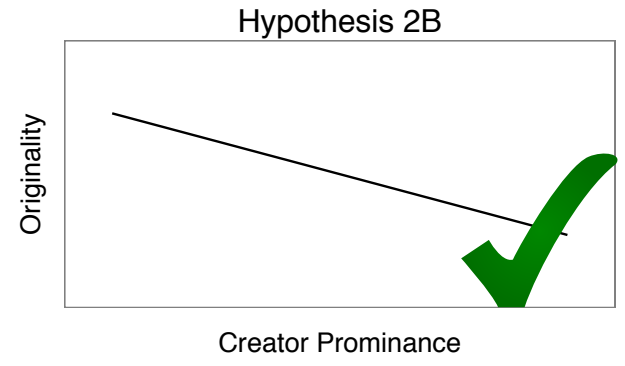

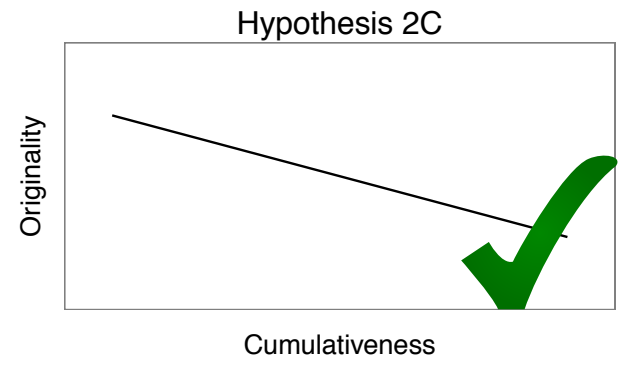

Takeaways

Projects are more likely to be remixed when they are:

- **Moderately complicated**
- Created by **prominent creators**
- **Cumulative**

But, there is a **tradeoff** in that each of these factors is also associated with **less original** forms of remixing behavior.

Promoting **complexity** seems like the best option.

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Laboratories of Oligrachy

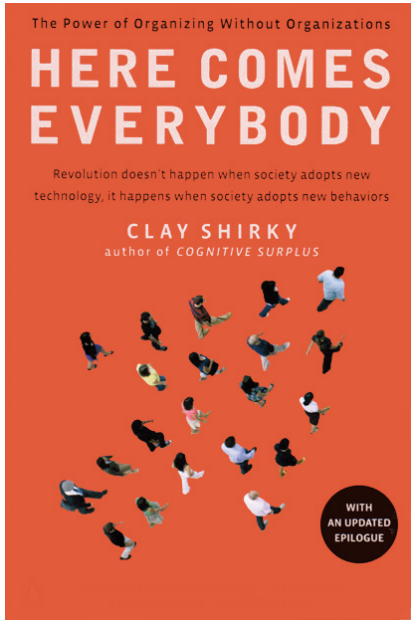
Citation

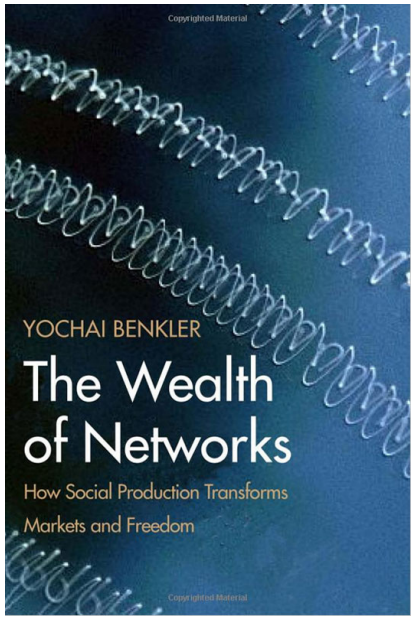
Shaw, Aaron, Benjamin Mako Hill. "Laboratories of Oligarchy? How The Iron Law Extends to Peer Production." *Journal of Communication* 64, no. 2 (April 2014): 215–38.

Peer Production as Participatory Democracy?

Peer production projects have been cited function as a **novel form of participatory organization**...

- ... with a broad **democratizing potential** inspiring waves of social movement activists and theorists. (e.g., Benkler, 2006; Castells, 1996; Fuster Morell, 2012; Hess and Ostrom, 2011; Wilson and Tufekci, 2012)
- ... and a model of **leaderless organization** e.g., (Shirkey 2008; Konieczny, 2009)





Robert Michels' "Iron Law"

"He who says organization says oligarchy."

As organizations increase in size and complexity, they have a tendency to **develop oligarchy leadership** that **pursues conservative goals** consistent with organizational maintenance.

(Michels 1915; Lipset et al. 1956 Leach, 2005; Voss and Sherman, 2000)

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? INGRESA AQUÍ

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Posicionamiento respecto a reglamentación de la Reforma Política

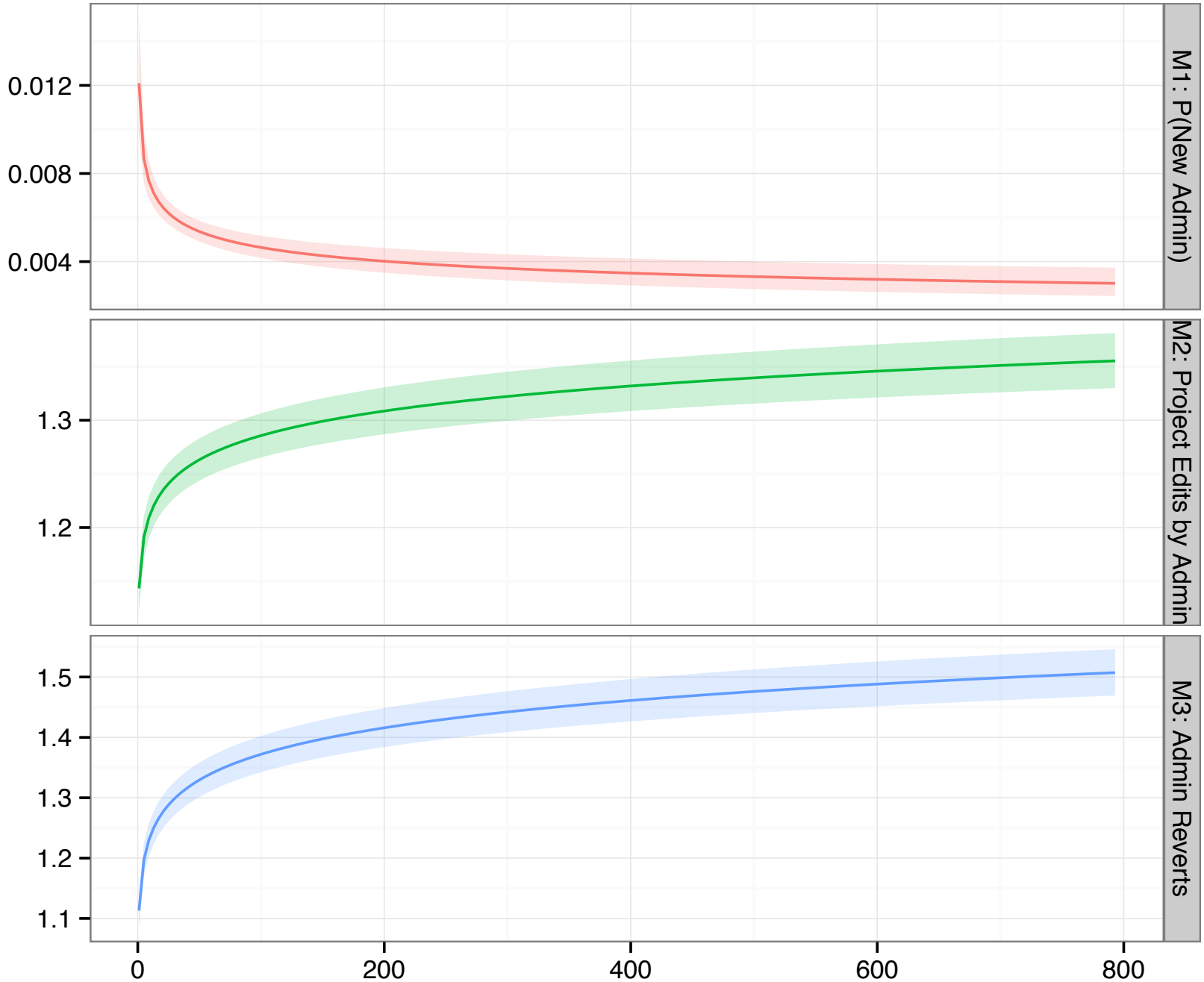
sábado 15 de junio 2013 11:32 AM

A la opinión pública, El 9 de agosto de 2012 se aprobó una Reforma Constitucional que establece nuevas herramientas para que los ciudadanos tengan más opciones para participar en la política del país: Las candidaturas independientes (Art. 35 Fracc. II), ... Seguir leyend

IMPORTANTE

Aunque ya somos 563 miembros afiliados, necesitamos ser más de 220,000 a diciembre de 2013 para obtener el registro de Partido Político Nacional.

De tu afiliación depende revolucionar la política en México:



Prototypical Plots