The context of crowdsourcing: A driver of organizational openness?

David C. Thompson
Jörg Bentzien
Weak

- A loosely connected network of individuals who, through internet enabled services and community, can be engaged in a full spectrum of activities ranging from micro-task through to multi-hour research project.

- Such actors may associate with skills-based communities that have no connection with the pharmaceutical industry, or healthcare.
Crowd computing: using competitive dynamics to develop and refine highly predictive models

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A recent application of a crowd computing platform to develop highly predictive in silico models for use in the drug discovery process is described. The platform, Kaggle™, exploits a competitive dynamic that results in model optimization as the competition unfolds. Here, this dynamic is described in detail and compared with more-conventional modeling strategies. The complete and full structure of the underlying dataset is disclosed and some thoughts as to the broader utility of such ‘gamification’ approaches to the field of modeling are offered.

“What is described is a process for organizational Exploration in the face of the need to determine objective solutions. The process uses the dynamics of ‘Exploit’, to enable Exploration in an open and transparent fashion. What is described will not replace the scientific method, or robust hypothesis generation and evaluation. In our experience this process generated a host of solutions that are statistically equivalent, and of a variety of different complexities of implementation.”

“We don’t know it all: Crowd computing to develop and refine predictive in silico models”, Jörg Bentzien, David C. Thompson, and Ingo Muegge, The Gordon Research Conference on Computer-Aided Drug Design, West Dover, VT (2013)
LOOK, I DON'T KNOW WHY THE SQUARE PEG DOESN'T FIT IN THE ROUND HOLE

BUT THAT'S NOT MY PROBLEM. FIX IT.
Figure 1. Fundamental boundaries are rapidly blurring in the business environment and economy

**Physical and digital**
The Internet of Things, 3D printing, and other technologies are driving a further blurring of the physical and digital worlds. Further transformations are likely as lifelike digital worlds become increasingly accessible through virtual reality technology.

**Humans and machines**
While further penetrating manual and routine cognitive work, new technological advances in artificial intelligence (including machine learning, natural language processing, and automated reasoning) are now also transforming machine capabilities in the nonroutine cognitive domain.

**Producers and consumers**
Once passive recipients, consumers are increasingly active participants. Open source, peer-to-peer networks, the "sharing economy," the "maker movement," crowdsourcing, and co-creation exemplify how "consumers" are becoming inseparable from "producers" of content, data, and even physical products.

Source: Deloitte analysis.
Open Science

• Scientists need to be more open among themselves and with the public and media
• Greater recognition needs to be given to the value of data gathering, analysis and communication
• Common standards for sharing information are required to make it widely usable
• Publishing data in a reusable form to support findings must be mandatory
• More experts in managing and supporting the use of digital data are required
• New software tools need to be developed to analyze the growing amount of data being gathered.

Royal Society (Great Britain)., and Policy Studies Unit. 2012. Science as an Open Enterprise.
YOU KNOW WHAT REALLY GRINDS MY GEARS?

PEOPLE NOT SHARING
Consortium Fatigue

“We need an evidence-based approach - a science of collaboration - to evaluate and inform the evolving multi-stakeholder collaboration environment in biomedical innovation.”

YOUR PARTY ENTERS THE TAVERN.

I GATHER EVERYONE AROUND A TABLE. I HAVE THE ELVES START WHITTLING DICE AND GET OUT SOME PARCHMENT FOR CHARACTER SHEETS.

HEY, NO RECURSING.
Who coordinates the coordinators?

More specifically, who coordinates the proliferating number of health care helpers variously known as case managers, care managers, care coordinators, patient navigators or facilitators, health coaches or even — here’s a new one — “pathfinders”?

Rachel Schwartz, a licensed clinical social worker for close to 20 years, came face to face with this quandary earlier this month. Employed by a home care agency in Virginia, she visited a woman in her late 70s who had recently come home from the hospital.
Dilemmas in a General Theory of Planning*

HORST W. J. RITTEL
Professor of the Science of Design, University of California, Berkeley

MELVIN M. WEBBER
Professor of City Planning, University of California, Berkeley
“In a pluralistic society there is nothing like the undisputable public good”
“There is no objective definition of equity”
Getting the fit right

Weak

Partial

Strong

Stuff to think about

• The act of scientific innovation is technically complex, and ...
• embedded in a sociological system that is itself a wicked problem
• Sustainable progress will require thinking how work can be structured around these observations
• There are strategies to cope with wickedness that depend on how power is distributed throughout a system ... which also impacts the openness of the system