

# NEW TAYLORISM AT WORK: PRODUCTIVITY THROUGH PACKET-SWITCHING



As more and more of our daily lives and interactions become visible and quantifiable, we are able to look at our work lives and analyze the data, see previously invisible connections, and program many previously serendipitous processes for desirable outcomes. While we have been able to do this to some extent in factories and assembly line processes for a while now, we will increasingly be applying tools of computation and programming to services and knowledge work. Clearly, not all knowledge processes can be programmed, but many more processes will be following this path.

## HIRING AND SKILL SELECTION BY ALGORITHM

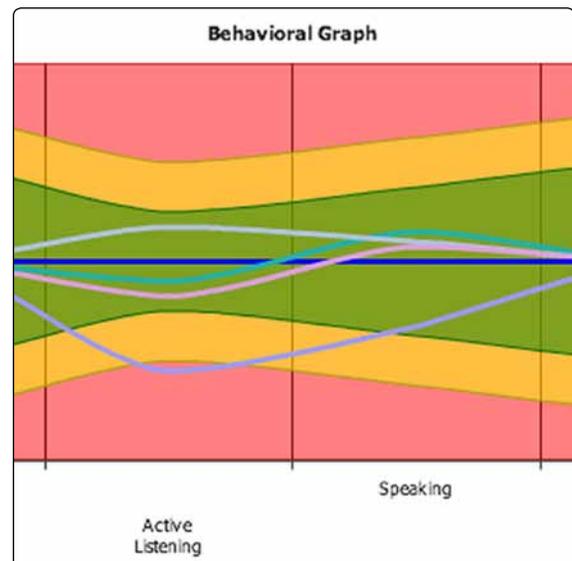
Following the lead of Google, large companies have begun hiring personnel by algorithm rather than relying on grades and SAT scores to identify promising candidates. Because academic research has shown that grades and interviews are not good correlates of employee success, the use of online biographical surveys that explore attitudes, behavior, personality, and biographical details of potential employees is on the rise. To spot applicants with the highest probability of becoming top-producing employees and to match skills with jobs, companies will increasingly rely on algorithms that correlate collected data with measures of performance gleaned from performance reviews and compensation data.

## QUANTIFYING KNOWLEDGE AND SERVICE WORK

Measuring the productivity of service workers, particularly knowledge workers, has been the subject of much academic debate. To date there are no reliable measurements of service work for the simple reason that no general agreement exists as to what the basic inputs and outputs of service work are or should be. However, diffusion of communication, computing, and sensing technologies will increasingly make many parts of knowledge work visible and quantifiable. For example, if a work team uses Google Docs, wikis, or other social software tools, their presence and contributions on each can be measured. Time spent on a task, including time spent with a customer, can be logged and correlated with an outcome such as making a sale.

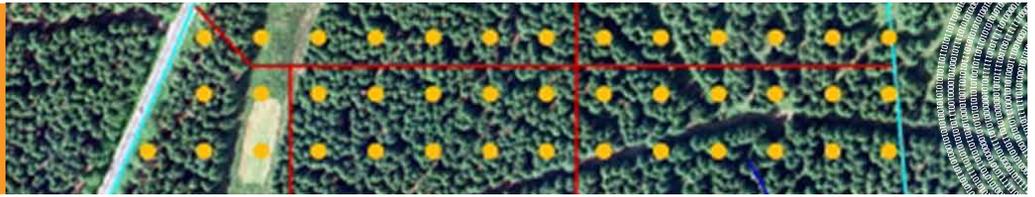
## FROM INTUITION TO PREDICTION MARKETS AND SIMULATIONS

It's not surprising that companies such as Google, eBay, and Yahoo! are bringing experimental economics on board since their bread and butter is optimizing searches, auctions, and other online transactions. Increasingly, however, gaming platforms, modeling, and prediction markets are becoming the staple of traditional companies and governments as they plan the timing of product launches, determine sales incentives, demand from distributors, and assess the policy implications of various government initiatives. The ability to easily aggregate massive amounts of information and behavioral data will make tools such as prediction markets and lightweight simulations increasingly useful in a variety of decision-making domains. These tools can cut through corporate politics and result in better outcomes than intuitive decisions.



Skills graph from HireLabs

# ENABLING TECHNOLOGIES



**Location-based Computing:**  
Everything knows where it is

**Pervasive Wireless:**  
Continuous connection

**Sensors and Sensor Networks:**  
Everything in its right place

**Neuroimaging:**  
Peering into the open mind

**Neuromodulation:**  
The new mind control

**Sensory Data Interfaces:**  
Re-routing perception

**Ubiquitous Displays:**  
Every surface is alive

**Simulation:**  
Modeling possibility space

**Parallel Programming:**  
Applications for a multi-threaded world

**Deep Web:**  
Semantic engineering of linked data

## Signals:

### GOOGLE'S HIRING ALGORITHM (HIRING AND SKILL SELECTION BY ALGORITHM)



In the summer of 2006 Google sent out a 300-question survey to its employees, asking such questions as: Is your workspace clean or messy? Do you have pets? The data was correlated with 25 separate measures of performance as gleaned from performance reviews and compensation data. The large survey enabled Google to create several algorithms for predicting success in different areas—from engineering to sales, finance, and human resources. Now Google uses an algorithm to identify which of its 20,000 employees are likely to leave.

Source: <http://online.wsj.com/article/SB124269038041932531.html>

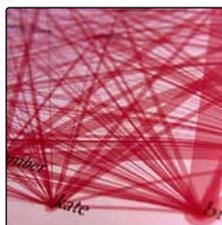
### LIVEWORK (QUANTIFYING KNOWLEDGE AND SERVICE WORK)



LiveWork from LiveOps is an example of a new type of service (others include oDesk and Elance) that provides a “workforce in the cloud.” It is a marketplace for outsourcing projects that operates as a performance-based auction. Results-based routing is used to outsource work to the best-performing workers available. Businesses can have real-time access to visible indicators of work progress on the platform and have the ability to create reports at any time.

Source: <http://www.liveops.com>

### HP'S SOCIAL COMPUTING LAB (FROM INTUITION TO PREDICTION MARKETS AND SIMULATIONS)



HP's Social Computing Lab, under the leadership of Bernardo Huberman, is at the forefront of using the collective intelligence of crowds to forecast various types of business indices and outcomes. The lab has created its own internal market system and supporting software called BRAIN (Behaviorally Robust Aggregation of Information in Networks) to help predict certain critical business issues such the quarterly sales forecast or the price of DRAM memory chips in one, three, or six months.

Source: <http://burak-arikan.com/os-relationships>



### What difference does this make?

**As basic work activities are increasingly documented and turned into data, many aspects of service and knowledge work are becoming visible and often quantifiable, with far-reaching consequences for organizations.**

#### LESS INTUITION, MORE QUANTIFICATION

The move from relying on intuition to data and quantification can lead to decision paralysis, second-guessing on simple decisions, and potential misapplication of data. It is important to figure out what processes, in what parts of the organization, can benefit from algorithms while avoiding their application in areas where their value has not been proven. The sweet spot is in combining algorithms with human judgment—augmenting rather than replacing human intelligence.

#### NEW LEVELS OF TRANSPARENCY

Living in a data-intensive world that relies on algorithms to uncover new patterns and connections ushers in new levels of organizational transparency. Organizations that bring in such tools to improve internal processes and decision making should be ready to accept that such tools operate outside of internal politics or personal agendas. There is no value in bringing them in unless the leadership is open to the results.

#### NEW SKILL SETS

Experimental design, data mining, programming, and statistical analysis are core to the use of new types of crowd-sourced platforms for organizational operations and decision making. Their use requires bringing on board not only those with quantitative skills, but also those with an understanding of how to generate engagement and participation in such platforms, and an ability to structure and guide community conversation or markets.



## What to do differently?

**Quantitative approaches can be applied to many workplace human resources issues. Tools are evolving fast, so continuous experimentation is necessary.**

### CONTINUOUSLY TEST CROWD-SOURCING PLATFORMS

Whether these are internal prediction markets, Twitter streams, or signal aggregation platforms, crowd-sourcing platforms are lightweight and easy to implement and test in house. Start with a small group and observe how these platforms change work dynamics and what new data you are able to collect and use. Identify what works and what doesn't, then scale experiments that work to larger groups and possibly the organization as a whole.

### USE SIMULATION PLATFORMS TO MODEL WORK PROCESSES

Similarly to experimenting with crowd-sourcing platforms, organizations can experiment with lightweight modeling tools and platforms to simulate various types of work-related processes and tasks, from modeling emergency situations to testing out the best team composition for a particular task or project.

### BALANCE INTUITION WITH QUANTIFICATION

Bob Sutton, professor of management at Stanford, puts it best when he writes that "intuition works best in the hands of wise people, . . . when people have the mindset to 'act on their beliefs, while doubting what they know.'" Intuition and data do not have to be at odds with each other. Good data should work in support of good decisions. Data is particularly useful to uncover new and unexpected patterns, confront contradictory facts, and counterbalance long-held but possibly fallacious beliefs.



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