

## Table of Contents

|  |    |
|--|----|
| Abstract   | 3  |
| <b><u>CHAPTER 1 INTRODUCTION</u></b>                       |    |
| 1.1 Introducing the Innovation Economy                     | 4  |
| 1.2 Efficiency vs. Workplace Humanization                  | 5  |
| 1.3 Bureaucracy and Innovation                             | 8  |
| 1.4 Autopoietic Organizational Models                      | 12 |
| <b><u>CHAPTER 2 RISE OF THE NETWORKED ORGANIZATION</u></b> |    |
| 2.1 Organic and Democratic Workplaces                      | 16 |
| 2.2 The Network Economy                                    | 18 |
| 2.3 Creative Labor and Idea Flow                           | 20 |
| 2.4 Participatory Innovation                               | 24 |
| <b><u>CHAPTER 3 COLLABORATIVE INNOVATION PLATFORMS</u></b> |    |
| 3.1 Introduction to Innovation Network Architecture        | 26 |
| 3.2 Case Study #1: Pfizer, Inc.                            | 28 |
| 3.3 Case Study #2: Department of Works and Pensions        | 33 |
| 3.4 Workplace Dynamics of Collaborative Innovation         | 38 |
| <b><u>CHAPTER 4 INNOVATION NETWORK POLITICS</u></b>        |    |
| 4.1 Claims of Democracy via Innovation Platforms           | 39 |
| 4.2 The New Labor Paradigm of Soft Control                 | 41 |
| 4.3 Concluding Remarks                                     | 43 |
| References   | 47 |

## **Abstract**

Organizational innovation, the process of generating value through addressing problems in novel ways, has historically been an exclusive function of managerial oligarchies. This paper will address how the constant demand to innovate in the modern global economy, and the emergence of powerful communication networks, have together led corporations to increasingly expand their search for new ideas beyond upper management, turning their attention to the collective brainpower of their entire cohort of employees. Whereas the first rudimentary suggestion box systems of the early 20<sup>th</sup> century first allowed factory workers to contribute creatively in addition to their physical labor power, organizations such as Pfizer and Whirlpool now utilize digital platforms to add value to the company by collecting employee ideas while encouraging participation and collaboration. The paper concludes with an analysis of the political economy of these collective innovation systems. Are these networks leading to more democratic organizations and happier, more engaged workers? Or, are they primarily extracting labor power from employees in new ways, without equitably distributing the profits?

# Chapter 1: Introduction

## 1.1 Introducing the Innovation Economy

For the past several decades, it has become increasingly clear that innovation and technological breakthroughs are central drivers of economic growth. It should come as no surprise then that the role of the organization in the context of *generating* innovations has changed to reflect this centrality, from the time of industrial society to today's modern information society. Under the Taylorist paradigms of rationalized efficiency that defined the industrial economy in the early-to-mid 20<sup>th</sup> century, the most centralized and rigid businesses thrived through mass production and assembly line mechanization. Under this paradigm, the worker was relied upon to contribute maximum labor power, yet without much engagement on a creative level. Over time, however, this style of management was superseded by networked organizations that used technology to orchestrate new paradigms of efficiency, tapping worker creativity in new ways while still maintaining centralized surveillance and control for the sake of productivity.

Writing during the era of industrialization, Max Weber argued that the 'formal rationality' of bureaucratic organizations dominates individuals' free will over social actions in order to promote efficiency and predictability<sup>1</sup>. For Weber, the rise of industrial society was inextricably linked with bureaucracy, replacing traditional organizational forms such as the church and family<sup>2</sup>. From a bureaucratic perspective, the management of production succeeds when the maximum amount of labor is extracted from the body of the

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<sup>1</sup> Hadden, 139.

<sup>2</sup> Elliot, 307.

worker, while resistance to company goals is minimized<sup>3</sup>. Weber believed that the complexity of industrial society required an oppressively high level of rationalization, since maintaining efficient organizations was impossible without promoting a system of inequality that alienated people from the freedom to follow their own idiosyncratic values<sup>4</sup>. F.W. Taylor and followers of his eponymous Taylorist school of thought justified the widening inequality between managers and workers through the promotion of ‘scientific management’ as a guiding principle of effective organizations. This movement turned labor power into a dehumanized commodity through the use of nominally scientific interventions that insisted on the most productive use of both material and human resources<sup>5</sup>. More recently, scholars like Rainie (2012) have argued that bureaucracy is, “very effective at organizing routinized production, but it does very poorly at these complex interactive tasks involving responsiveness and innovation.”<sup>6</sup> In the latter half of the 20<sup>th</sup> century, the relationship between laborers and production practices began to change, as it became more apparent that unhappy and disengaged workers were inherently less productive and capable of dealing with environmental uncertainties and rapid change.

## 1.2 Efficiency vs. Workplace Humanization

Industrial efficiency during the Fordist era was characterized by the subordination of workers’ autonomy, sovereignty, and even humanity to highly restrictive and repetitive

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<sup>3</sup> Rose, 55.

<sup>4</sup> Hadden, 140.

<sup>5</sup> Rose, 59.

<sup>6</sup> Rainie, 173.

production environments. However, today's neo-industrial theory suggests that workplace structures that minimize workers' psychological wellbeing in the name of efficiency are actually wind up subtracting from overall productivity. In contrast to Taylorism, movements such as that of the Tavistock Institute emerged in the 1940s, which sought a joint optimization between technical performance and the psychological needs of workers. Tavistock researchers sought to develop new forms of organizing that could replace hierarchical structures<sup>7</sup>. This framework led to research on empowering individuals to make decisions and have more creative control in light of outdated hierarchical structures, setting the stage for subsequent research that has studied the decentralizing impact of networks on organizational forms<sup>8</sup>. In a modern context, the application of network science to organizational practice was influential on management styles and the production of more efficient workers.

Emergent conceptions of workers as individuals with unique skillsets and sensitivities to managerial styles have led to new forms of organizing that include leveraging the diversity of crowds and creating more democratic or meritocratic ways of participating within groups. More inclusive business practices, like Whitleyism in early 20<sup>th</sup> century Britain, allowed workers' voices to be heard in a wider register while maintaining enough bureaucratic structure for continued profitability. This give-and-take helped management:

“reconcile the apparently opposing realities of the bosses' imperative of efficiency with the intelligibility of the workers' resistance to it, and to claim

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<sup>7</sup> Hatch, 32.

<sup>8</sup> Ibid.

the capacity to transform the subjectivity of the worker from an obstacle to an ally in quest for productivity and profit.”<sup>9</sup>

While scientific management styles saw individual difference as an obstacle to be overcome to systematically maximize workers' labor output, more democratic communicative practices actually leveraged idiosyncratic abilities to contribute more creatively to collective problems.

Nikolas Rose categorizes ideas from Whitleyism and accompanying movements as supporting managerial claims that “there is no conflict between the pursuits of productivity, efficiency, and competitiveness on the one hand and the 'humanization' of work on the other.”<sup>10</sup> The Whitley system in the British civil service used surveys of workers to facilitate the development of policies, for example, on issues including the principles and methods of promotions and questions of sick leave<sup>11</sup>. The managers who implemented this system enjoyed the benefits of more engaged workers as well as the surplus creative power they generated in response to organizational problems.

A similar process developed in American factories during World War II, where thousands of production plants set up suggestion systems that encouraged average citizens to contribute their creative capacity to helping the war effort in addition to their physical productive labor<sup>12</sup>. These systems were quite rudimentary from a technology standpoint, generally consisting of wooden boxes that were filled with written ideas, read and followed up on by management. The patriotic exigency to help the Allies to victory drove widespread

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<sup>9</sup> Rose, 73.

<sup>10</sup> Rose, 56.

<sup>11</sup> Macrae-Gibson, 23.

<sup>12</sup> Unterberg, vi.

participation in such collaborative innovation systems, as both federal agencies like the War Department and private companies such as General Motors paid millions in rewards to employees who contributed ideas that increased the output of wartime production<sup>13</sup>.

Workers thus enjoyed greater levels of integration into the enterprise, while management still maintained authority.

Feenberg writes that ultimately, “Democratization of modern technically mediated organizations is not fundamentally about the distribution of wealth nor even formal administrative authority, but concerns the structure of communicative practices.”<sup>14</sup> The success of early collaborative innovation systems demonstrated the potential of leveraging a diverse group of workers to be more engaged and generate value in new ways. While primitive in nature, the original suggestion boxes in factories provided an alternative mode of communication that helped reshape organizational structures. Furthermore, this process promoted a dual sense of value, where employees felt contentment from being creatively involved in defining the practices of their organization, while managers enjoyed the valuable flow of innovative ideas generated by their staff’s collective intelligence.

### 1.3 Bureaucracy and Innovation

Under the organizational precepts of industrial society, economies of scale and centralization are promoted alongside strictly vertical communication practices.<sup>15</sup><sup>16</sup> Similar to how the tumultuous wartime years lead to high levels of innovative engagement

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<sup>13</sup> Osborn, 55.

<sup>14</sup> Feenberg, 120.

<sup>15</sup> Zuurmond, 166.

<sup>16</sup> Naisbitt, 98.

between producers and the working masses, economic upheaval during the concurrent stagflation and energy crises of the early 1970's intensified a collective demand for higher levels of creative collaboration in organizations. The end of the postwar economy's Long Boom period lead to the need for evolutionary change, where hierarchically-structured organizations struggled to keep up with the rapid pace of an increasingly unstable business environment. Hatch describes the relationship between stability and centralization by writing that:

“While in stable environments, hierarchy and centralized coordination were favored, in unstable environments there is a need to push decision making to lower hierarchical levels so that problems can be dealt with through direct communication with those possessing relevant knowledge.”<sup>17</sup>

While adaptability was less important when economies of scale were dominant, this characteristic became far more important when environmental pressures necessitated the transition toward more flexible production practices. The shift required new styles of organizational coordination in response to the emergence of economies of scope, new telecom technology, outsourcing, and the integration of global marketplaces<sup>18</sup>.

Changing global dynamics contributed greatly to the de-bureaucratization of organizations. Du Gay argues that globalization leads to uncertainty and thus contributes significantly to the necessity for constant development of new ideas: “In such an environment, only those organizations that can ‘stay close to the customer’ – reflexively reconstituting their conduct to become ever more enterprising and innovative – will

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<sup>17</sup> Hatch, 102.

<sup>18</sup> Harvey, 147.



survive and prosper.”<sup>19</sup> Environmental factors directly influence the emergence of different types of organizations and less bureaucratic organizations become a necessity when facing an environment of uncertainty and rapid change<sup>20</sup>. Some scholars attribute globalization to the newfound ability to instantaneously share knowledge and information around the world<sup>21</sup>. Consequently, this paradigm shift in communicative power has led to competition from global markets and the diffusion of more collaborative organizational structures.

The United States was not the first country to buy into this changing paradigm; Japanese companies like Toyota pioneered flexible production through organizational restructuring. Toyota founder Eiji Toyoda was inspired by the suggestion systems in American Ford factories yet saw room for expanding the process of continuous improvement through a kind of employee engagement process known as ‘kaizen’<sup>22</sup>. Japanese industry was revolutionary in its emphasis on the social or collective nature of work as teams were empowered to develop solutions to problems and work on company-wide improvements<sup>2324</sup>. The instability of the late 20<sup>th</sup> century and concomitant decline of Fordist and Taylorist practices were also met by the development of new communication technologies and practices that marked the transition from the industrial society to the information society.

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<sup>19</sup> Du Gay, 68.

<sup>20</sup> Bakken et al, 173.

<sup>21</sup> Hatch, 80.

<sup>22</sup> Chester, 1.

<sup>23</sup> Kenney, 97.

<sup>24</sup> Rainie, 13.

The so-called Information Age largely refers to the emergence of technological conditions that made it possible to more easily connect people across disparities in time and space<sup>25</sup>. Technological breakthroughs in computing and telecommunications, as well as the rise of the Internet, made it possible for bureaucracies to fall out of favor in light of 'infocracies': networked organizations where control is embedded within information and communication infrastructures.<sup>26</sup> While American corporations nominally invested \$5 billion per year in information technology in 1970, that number has since skyrocketed to \$350 billion in 2008<sup>27</sup>. While economies historically relied primarily upon flows of physical products, communication systems and information flows have come to rival supply chains of materials in importance to the modern economic system.<sup>28</sup> Furthermore, knowledge creation that leads to the application of new ideas becomes increasingly critical to economic success. In this way, the information society has for many business process thinkers also become an *innovation* society; one that it functions not just by spreading knowledge, but also by channeling the creation of *new* knowledge to drive profits.

This overall shift from rigid to flexible production practices is directly linked by authors such as Surowiecki to the necessity for a firm to be *adaptive* in uncertain conditions<sup>29</sup>. Harvey argues that the defining characteristic of Post-Fordism is the dependence on intensified rates of commercial, technological and organizational

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<sup>25</sup> Webster, 30.

<sup>26</sup> Zuurmond, 179.

<sup>27</sup> Rainie, 174.

<sup>28</sup> Van Dijk, 69.

<sup>29</sup> Surowiecki, 220.

innovation.<sup>30</sup> With this in mind, scholars argue from hindsight that the traditional bureaucratic model itself was detrimental to organizational innovation:

The last implication on the situational influences on innovation is the very nature of the organizational structure and the company's hierarchy. Kanter (1983) claims that the old bureaucratic model will act as an obstacle to innovation and diffusion of knowledge, while in support of that notion, Lovelace (1986) claims that a more decentralized, organizational structure, a matrix organization, provides the individual with sufficient freedom and opportunities to be creative, innovative and exchange valuable knowledge and information.<sup>31</sup>

In terms of historical lessons learned in the transition from traditional bureaucracy to flexible organizations then, an unstable economic and trade environment precipitated a transformation that incorporated more innovation-producing business practices for the purpose of overcoming outside challenges and maintaining advantages over competitors.

## 1.4 Autopoietic Organizations

This imperative to more flexibly structure organizations around adaptability rather than bureaucracy in response to a changing environment finds broader theoretical justification in the concept of *autopoiesis*, applied to organization and communication theory. Biologists first used the term autopoiesis in 1972 to describe the self-maintaining

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<sup>30</sup> Harvey, 147.

<sup>31</sup> Piperopolous, 29.

chemistry of living cells as they reacted to external factors in their environment<sup>32</sup>. Despite its original scientific context, many subsequent scholars have extended the concept to social domains such as organizational theory, where environmental factors were traditionally considered separate from the identity of an organization<sup>33</sup>. Here, intraorganizational communication gets equated with the process of genetic evolution in nature<sup>34</sup>. By extension, autopoiesis theory argues that organizations are constantly adjusting to the possibilities afforded through their surroundings, as external uncertainty and competition are linked directly with possibilities for applying new ideas within an organization. As *irritations* in the environment put pressure on an organization to adapt, these same irritations promote taking the initiative to develop innovations in order to best compensate for them by intentional means<sup>35</sup>. In other words, the environmental imperatives of the economically unstable 1970s combined with the emergence of new communication technologies to foster the genesis of autopoietic organizations that were inherently more innovative than their bureaucratic predecessors.

While autopoietic systems react to external variables, they remain autonomous in the sense that they produce their own boundaries and structure in response to these variables<sup>36</sup>. Scholars say these systems are ‘coupled’ to their environment, recreating themselves to function at the highest level possible in regard to outside factors. As early as 1965, scholars wrote about how the bureaucratic features of organizations have a negative

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<sup>32</sup> Magalhães, 4.

<sup>33</sup> Bakken et al, 172.

<sup>34</sup> Id.,72.

<sup>35</sup> Bakken et al, 71.

<sup>36</sup> Auernhammer, 80.

correlation with their capacity to innovate<sup>37</sup>. Since it has only been in modern times that innovation has become almost mandatory, organizations are still in the ongoing process of replacing bureaucratic structures with more collaborative communication practices that allow employees to take risks and contribute value in autopoietic ways<sup>38</sup>. Overall, communication is only becoming more crucial to the way that organizations deal with novelty. Novelty is the use of creativity to develop new and potentially useful ideas that may become innovations once they are identified as adding value and are applied as a new part of the organization. Communication practices are crucial to how an organization deals with and incorporates novelty in an autopoietic fashion, since channels of communication have different levels of redundancy or excess capacity that create room for innovation and development to occur<sup>39,40</sup>. This framework is useful for understanding how organizations react on a structural level to environmental factors, reconstituting themselves to take advantage of surplus connectivity and utilizing workers as innovation generators.

It is worth emphasizing that information and communications technology (ICT) is the central form is that of the network. The rise of networked organizations has had a massive effect on how knowledge is transmitted and commodified in the information economy. The new economy is based on the networking of human intelligence to socialize the mass of proletarianized knowledge workers into an economy of continuous innovation<sup>41,42</sup>. ICTs simplify the “rationalization and decentralization of production,

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<sup>37</sup> Bakken 174.

<sup>38</sup> Bakken et al, 69.

<sup>39</sup> Auernhammer, 37.

<sup>40</sup> Bakken et al, 170.

<sup>41</sup> Fuchs, 180.

<sup>42</sup> Terranova, 80-81.

teamwork, the flexibilization of jobs, and the flattening of organizational hierarchies.”<sup>43</sup> The Internet especially has played a crucial role in reducing the communication costs of organizations. Terranova writes that workers who are not connected to the World Wide Web and company Intranet become “obsolete, unnecessary, disposable” while those who agree to log on “become part of the ‘hive mind’, the immaterial economy of networked, intelligent subjects in charge of speeding up the rhythms of capital’s ‘incessant waves of branching innovations’”<sup>44</sup> While “the shift to networked and organizations” began before the mass development of Internet and mobile technology, these two revolutions have subsequently accelerated the shift toward a larger creative class and the rise of more knowledge-based work<sup>45</sup>. The advent of the information economy and development of communication technology thus had a reciprocal relationship while they both became critical drivers of post-industrial business.

I have tried to indicate in this chapter the ways that organizational structures have evolved to meet the demands of the post-Fordist economy. While the corresponding rise of networks and global ICTs allowed for new ways of decentralizing information flow, the locus of power within enterprises remained steadily centralized. The need to maintain an effective internal composition in relation to changing external factors through widespread innovation continues to be framed by autopoietic ideas. As we will see in the next chapter, the Internet and mobile revolutions have especially fostered a self-organizing dynamic in

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<sup>43</sup> Fuchs, 155.

<sup>44</sup> Terranova, 81.

<sup>45</sup> Rainie, 172-173.

business, bringing about new possibilities for making organizations more 'flat', adaptable, and inventive.

## Chapter 2: Rise of the Networked Organization

### 2.1 Organic and Democratic Workplaces

In a predictable business environment, heavily bureaucratic forms of organization thrive by using rigidly standardized procedures designed to generate efficiencies and maximize worker output. Since the 1970s, increasing competition among transnational businesses has led to a new premium being placed upon adaptability and the ability to constantly innovate<sup>46</sup>. As we saw in the last chapter, the creation of knowledge and use of up-to-date information surpassed the control of labor production as the central commodity of post-industrial society, and so new business practices that encouraged better flow and development of information became essential<sup>47</sup>. The emergence of information as the primary resource for success was compounded by the rise of networks as increasingly pivotal in defining social relationships. Furthermore, the *perpetual-innovation economy* of today's business world increasingly depends on networks to facilitate the flow of information, in order to continually reconfigure products and production processes for maximum profit and productivity.

Reflecting the conceptual turn to autopoietic systems theory, organizational scholars have since argued that in unstable environments, *organic* organizations with

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<sup>46</sup> Schiller, 157.

<sup>47</sup> Hatch, 80.

distributed agency are more successful and innovative than mechanistic organizations that are hierarchical and bureaucratic<sup>48</sup>. In the context of an increasingly interconnected global economy, inflexibly structured institutions are poorly suited for adapting to circumstances and generating new means of efficiency. Highly stratified levels of control, narrowly defined roles and tasks, and centralized decision making impede creativity and flexibility<sup>49</sup>. On the other hand, decentralized and organic organizations are better suited to handle the 'time-space compression' that occurs when communication technology enables rapid, global flows of information<sup>50</sup>. As Western society rapidly transformed from an industrial society to an information society, there has been a corresponding change among organizational structures and communicative practices to better deal with uncertainty circumventing hierarchies so that group members could apply knowledge directly<sup>51</sup><sup>52</sup>. The possibilities of ICTs have simultaneously allowed organizations to become more diverse and adaptable while also changing the way group members conceive of themselves in relation to other network actors.

Traditionally, the pursuit of efficiency within an organization has justified shifts toward oligarchic control, centralization, and hierarchy<sup>53</sup>. Today, while corporations still seek to maximize the productive power of their employees, organizations are structured less around the goal of exploiting labor through regimented efficiency, and instead seek to exploit idiosyncratic creative agency to develop new processes that benefit the company.

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<sup>48</sup> Hatch, 98.

<sup>49</sup> Hatch, 99.

<sup>50</sup> Harvey, 147.

<sup>51</sup> Naisbitt, 9.

<sup>52</sup> Hatch, 121.

<sup>53</sup> Bimber et al, 81.



Dismantling bureaucracy encourages employees to contribute in new ways, and a concurrent movement to ‘democratize’ the workplace has helped to engage workers while also boosting productivity, too. Management scholars such as Marshall Sashkin write in this vein, discussing the dual benefit of participatory corporate structures as promoting ‘democratic principles’ while making workers happier and more productive<sup>54</sup>. As presented in later chapters, however, the empowerment of employees can often be a double-edged sword. This is because “the employee with increased responsibility may also be the employee with 1½ or 2 jobs to do.”<sup>55</sup> Creating organizational structures where workers feel like they can participate in decision-making and contribute creatively ostensibly creates ostensibly more democratic work environments, but potentially at the cost of inundating employees with new duties that are often uncompensated and assigned in excess to existing responsibilities.

## 2.2 The Network Economy

While organizations traditionally extract physical labor power in a circumscribed way from employees, *mental* power is now increasingly sought in addition to other responsibilities. The rise of intrafirm corporate networks has allowed for corporations to tap into their workers’ creative capacities in unprecedented ways<sup>56</sup>. Rose cites McGregor’s claim that, “under the conditions of modern industrial life, the intellectual potentialities of

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<sup>54</sup> Chaney 168.

<sup>55</sup> Chaney, 168.

<sup>56</sup> Schiller, 17.

the average human being are only partially utilized.”<sup>57</sup> Similarly, a leading scholar on leveraging the abilities of ‘crowds’ of people writes that:

Crowdsourcing operates under the most optimistic of assumptions: that each one of us possesses a far broader, more complex range of talents than we can currently express within current economic structures. In this sense crowdsourcing is the antithesis of Fordism, the assembly-line mentality that dominated the industrial age.<sup>58</sup>

However, new forms of network architecture developed in the last quarter century have the potential to take better advantage of the crowd’s collective brainpower within an organization. Information Communication Technology (ICT) names the evolving set of hardware and software systems used to facilitate communication across time and space. In the modern information economy, the majority of labor is spent developing and designing products that facilitate the flow of information, files and software; as this work is iterative, with platforms and solutions building on the prior achievements of groups of developers, reproducing this technology on a large scale is becoming easier and cheaper by the year<sup>59</sup>. Beyond merely retransmitting existing knowledge, ICTs include knowledge networks that facilitate the ongoing process of knowledge *creation* through empowering users and groups to build, distribute, exchange, accumulate and use knowledge<sup>60</sup>.

Without digital networks to complement face-to-face interaction, it becomes

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<sup>57</sup> Rose, 112.

<sup>58</sup> Howe, 13-14.

<sup>59</sup> Van Dijk, 78.

<sup>60</sup> Id, 69.

extremely difficult to imagine exchanging information quickly and efficiently in multiple directions<sup>61</sup>. These systems have been heralded by some as a ‘technology of freedom’ “since they enhance the freedom of choice for individuals, while intensifying horizontal relations in networks of organizations and individuals.”<sup>62</sup> Not only that, but organizations developing innovation networks benefit from bridging the gap between individual personalities and needs and the organizational imperative to develop new sources of competitive advantage.

## 2.3 Creative Labor and Idea Flow

The modern economic paradigm of knowledge and adaptability is heavily reliant on harnessing the creativity of workers. Economist Richard Florida postulated that “creativity has come to be valued—*and systems have evolved to encourage and harness it*—because it is increasingly recognized as the font from which new technologies, new industries, new wealth, and all other good economic things flow.”<sup>63</sup> The emergence of platforms designed to encourage innovation is predicated on the belief that creativity is not a rare virtue possessed by a handful of geniuses, but rather an ability inherent to every individual if they are passionate and able to take risks. By giving workers more free space to experiment, creativity becomes more tied to the unique imagination of each individual and less dependent on approval from a hierarchy of bosses. It becomes easier to coordinate production when workers are responsible for acting creatively, and thus “instead of having

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<sup>61</sup> Hatch, 282.

<sup>62</sup> Van Dijk, 105.

<sup>63</sup> Florida, 15.

to make constant resort to orders and threats, companies can rely on workers to find new, more efficient ways of getting things done.”<sup>64</sup> Companies that allow their employees to be creative by valuing their input, challenging them, having mechanisms for mobilizing resources around ideas, and being receptive to changes enjoy a flow of innovation that creates competitive advantage in the short run and evolutionary advantage in the long run<sup>65</sup>. Creative employees benefit their company not only through creating new technologies and services, but also by refining their business practices and developing new and more expedient methods.

Many scholars have argued that creativity is not an isolated process but works best when a diverse set of actors are engaged with each other. This combination of many minds working in harmony is generally referred to as collective intelligence. Pentland describes collective intelligence as most effective when group members learn from each other while also sharing and vetting ideas<sup>66</sup>. This is important for remaining relevant in a fast-paced corporate environment, since a strong idea flow is the difference between an energetic and creative company and a stale stagnant one.<sup>67</sup> Pentland argues that passive monitoring of the social metrics of employees helps encourage the flow of ideas that generate value for the organization. Social metrics are analytical records of individual interactions, set up and monitored on the belief that the most productive people are those who continually engage with others in order to develop and transmit ideas<sup>68</sup>. As digital networks increasingly

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<sup>64</sup> Surowiecki 213.

<sup>65</sup> Florida, 26.

<sup>66</sup> Pentland, 44.

<sup>67</sup> Id, 42.

<sup>68</sup> Id, 36.

facilitate intraorganizational interaction, the benefits of Pentland's idea flow come to be realized on a large scale, insofar as they get more and more fully embedded into work practices. Stan Metcalfe adds to this argument that the most innovative organizations are those that have the proper technical systems in place to facilitate the flow and growth of knowledge<sup>69</sup>. In this way, there is a clear link between networks and the accelerated generation of collective intelligence that is necessary in today's economic environment.

Beyond promoting the development of creative capital within an organization, innovation means turning ideas into marketplace reality<sup>70</sup>. Innovative products and services provide exceptional value by solving problems in a unique or superior way compared to conventional methods<sup>71</sup>. Networked ICTs play an important role in this process by allowing management to consider a greater multiplicity of ideas from a more diverse group of contributors. While early waves of automation replaced factory workers by making their manual labor power less important, network society scholars argue that communication networks actually capitalize on human talent that is hard to replicate via robotics: the talent of creation and ingenuity. Terranova references Pierre Levy's claim that, "Unlike the first wave of cybernetics, which displaced workers from the factory, computer networks highlight the unique value of human intelligence as the true creator of value in a knowledge economy."<sup>72</sup> Inspiring innovation is considered one of the largest benefits to utilizing networks in an organizational context, along with encouraging

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<sup>69</sup> Metcalfe, 221.

<sup>70</sup> Holt, 1.

<sup>71</sup> Tucker, 16.

<sup>72</sup> Terranova, 84.

information sharing and liberating decision-making<sup>73</sup>. Functionally, these platforms thus have the power to bridge the gap between unharnessed creativity and its utilization in innovations that bring about tangible benefits.

While knowledge has more traditionally been organized hierarchically, this has become an ineffective business practice, since “in the current climate of globalization, decentralization and data ubiquity, one can never know where the next good idea will come from or who in the organization holds important pieces of information”<sup>74</sup>. The burden of creating new innovative ideas is thus better addressed when the onus is distributed from a small group of upper management to many employees in different sectors of the organization. “ICTs not only facilitate communication between individuals, but also strengthen organizational structure,” as they are able to increase cohesion across the organizational community and create new patterns of idea flow that benefit the company’s ability to create new and lucrative products<sup>75</sup>. Recent scholarship echoes the notion that a competitive advantage is gained from sharing resources among different organizational units<sup>76</sup>. Organizational networks have the potential to create cohesion across different sectors and consequently improve the diversity of member interaction and the flow of ideas.

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<sup>73</sup> Hatch, 282.

<sup>74</sup> Matzler, 32.

<sup>75</sup> Awazu, 52.

<sup>76</sup> Tsai, 473.

## 2.4 Participatory Innovation

In sum, networked communication has created new relational pathways that profoundly alter the way members of a group organize themselves and contribute value. ICTs have made workers more productive, flexible, collaborative and connected. Network researchers such as Rainie argue that digitized societies have empowered people to become more innovative by making boundaries more permeable, interactions more diverse, and hierarchies flatter and more recursive<sup>77</sup>. As the next generation of workers enters the labor force, individuals who are accustomed to using social networks in a private capacity will be able to pick up the use of intraorganizational networks at their place of business in a deeply intuitive manner. The changing dynamics of private enterprise are demonstrative of the way network society' are bringing profound new possibilities to both power and social dynamics. Technology mediates agency and thus has the potential to challenge positions of possibility, status and relations of power<sup>78</sup>. Free market corporations increasingly need to understand employee suggestions and user needs as a matter of survival in a fast-paced economy, yet the resulting effect is a decentralization of creative agency that impacts the way organizations are configured.

Though it may have roots in a kind of social sharing- less as an altruistic activity, and more of an emergent effect of post-Taylorist trade and competitiveness- participatory innovation through ICTs flattens hierarchical structures as a response to the business climate. Furthermore, while decentralized networks may arguably be more democratic, the Internet is more capable of creating distributed networks than truly decentralized

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<sup>77</sup> Rainie, 37.

<sup>78</sup> Slack & Wise, 139.

linkages<sup>79</sup>. While fundamentally necessitated by business factors, this kind of technology has the potential to positively reconstitute societal relationships because “a technology continually revised and advanced through innovative dialogue would incorporate different values reflecting a broader range of interests and a more democratic vision.”<sup>80</sup> In other words, while ICTs are not being used to turn businesses into truly democratic or even socialistic enterprises, they nevertheless do foster participatory design and new levels of engagement that are arguably democratic in a more limited way.

Van Schewick describes this potential by saying that, “a large, diverse group of potential innovators, with diverse motivations and with access to diverse types of funding, not only will discover more opportunities for innovation than a small group of homogenous network providers; it also is likely to realize a larger number of the opportunities that are discovered.”<sup>81</sup> Harvey writes that in this dynamic, “large organizations (cannot) support themselves without providing some sanction, or some attraction distinct from the public good itself, that will lead individuals to help bear the burdens of maintaining the organization.”<sup>82</sup> While networks offer potential for flattening hierarchies and broadening participation, they nevertheless preserve the basic tenets of capitalistic power; network scholars such as Barney argue that the development of network society represents a deep continuity rather than a rupture in the economic trajectory of Western society<sup>83</sup>.

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<sup>79</sup> Winner, 169.

<sup>80</sup> Feenberg, 125.

<sup>81</sup> Van Schewick, 314.

<sup>82</sup> Harvey, 15-16.

<sup>83</sup> Barney, 69.



In this vein, financial benefits are an obvious way to boost participation in innovation networking, whether in the form of direct payment or in the potential of earning future payments such as through a promotion. Through digital environments, though, it can be easier to encourage innovative production through motivational factors beyond simple monetary rewards<sup>84</sup><sup>85</sup>. Friendship, reputation, and shared ideology are deeply effective since they can generate trust and cooperation<sup>86</sup>. Overall, networks are more likely to harness group members' creativity when the users feel like stakeholders for personal and social reasons in addition to economic incentivization. From an organizational standpoint, how are networks changing the way workers collaborate and share ideas with each other? Are workplaces being democratized, or more simply are they adapting to the new patterns, pace and scale of the information economy? How does creating free space for employee creativity maintain existing power structures in a corporate environment? Pursuing these questions is the focus of the next chapter.

## **Chapter 3: Collaborative Innovation Platforms**

### **3.1 Introduction to Innovation Network Architecture**

In an article from Computerworld boldly titled *Innovation Democracy*, the author praises the management of American appliance maker Whirlpool for embedding innovation as a core competency by designing online infrastructure that engaged

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<sup>84</sup> Malone, 27.

<sup>85</sup> Florida, 21.

<sup>86</sup> Hatch, 282.

employees in the creative process. The article quotes a Whirlpool executive as saying that, “We talked to every major consulting firm in the world. And all of them said, ‘Don’t bother. Innovation comes from a few at the top.’”<sup>87</sup> The author argues that, as it turns out, technology has the potential to create a radically productive but also democratic innovation process. The article makes the bold claim that Whirlpool’s *Innovation E-Space* infrastructure demonstrates that business have become more democratic, meritocratic and even technologically utopian by spreading networked opportunities to create and collaborate within their organization.

This chapter will provide a glimpse of two other large organizations that have adopted similar practices to Whirlpool as part of initiatives to grow an innovation culture. While organizations take different technological approaches to achieving this goal, each system functions through promoting a mediated online space that facilitates collaboration among employees from different sectors and locations of the company. In this way, innovation networks represent a more active approach to encouraging employee engagement and idea flow than the passive monitoring system suggested by Pentland. These platforms take advantage of latent creative labor among employees and direct this power toward solving large-scale problems. Furthermore, management allows employees to work innovatively in a free space while retaining control over the process at various stages such as choosing which crowd-generated ideas should receive resources.

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<sup>87</sup> Melymuka, 31.

## 3.2 Case Study #1: Pfizer, Inc.

Pfizer Inc. exemplifies how massive global corporations increasingly emphasize collaborative innovation as a reaction to instabilities in the world marketplace. Pfizer found early success with chemical products such as iodine and citric acid, and their corporate literature attributes 19<sup>th</sup> century growth to a top-down imperative from its founders to embrace new technologies and ideas that promote innovation and efficiency<sup>88</sup>. The focus on continuous innovation of both products and business practices has remained a core part of Pfizer's business strategy as they negotiated a world that became more globalized and fast-paced in the 20<sup>th</sup> century.

Pfizer weathered the storm of the 1970's economic crisis by doubling down on its research capabilities and worldwide marketing skills. While the company had typically allocated less than five percent of its annual budget to research and development, the leadership of Pfizer in the 1970's was committed to the belief that 15 to 20 percent of the budget should be spent on R&D<sup>89</sup>. Through expanding the development of new ideas rather than focusing on reproducing what already works, Pfizer's story demonstrates how companies reimagine their internal structure in order to respond to the external factors of the evolving economic environment.

While devoting extensive resources to their research budget, Pfizer earned recognition as an innovative company by allowing employees to be more collaborative and take more calculated risks in order to help generate growth and bolster their bottom line.

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<sup>88</sup> Rodengen, 18.

<sup>89</sup> Rodengen, 109.

The company took steps in the 1970's to launch extensive interdisciplinary teams in order to accelerate processes and encourage the cross-fertilization of ideas between people from diverse sectors<sup>90</sup>. Connecting distinct teams cohesively was especially important in a globalized organization, which now has research labs all over the world and is sometimes called a "United Nations with test tubes."<sup>91</sup> Furthermore, risk taking is encouraged since Pfizer tries to make the most of products they develop even if they fail to meet their original expectations. In particular, the story of researching and marketing UK-92480 is 'innovation folklore'.<sup>92</sup> This drug failed to treat angina, a blood-vessel constricting condition that Pfizer sought to cure, yet made the companies billions of dollars once researchers determined it addressed an entirely different condition in test subjects. Pfizer brought UK-92480 to market under the name Viagra once it was realized that there was a great demand for drugs treating impotence, and company insiders cite this story as proof that a total commitment to innovation allows the flexibility to take risks and pivot when necessary in order to maximize progress achieved through research expenditure<sup>93</sup>.

Wendy Mayer, currently a VP of worldwide innovation at Pfizer, discusses the company's ongoing emphasis on innovation through encouraging the collaboration of heterogeneous actors: "We try to connect the dots across and develop different platforms that address all of the work that different teams are doing."<sup>94</sup> This mention of 'platforms' refers to the employment of intraorganizational networks that use technology in order to

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<sup>90</sup> Rodengen, 112.

<sup>91</sup> Rodengen, 110.

<sup>92</sup> Imber, 126.

<sup>93</sup> Kanter, 142.

<sup>94</sup> Sell, 2.

facilitate collaboration across vast and complex organizations like Pfizer. With 77,000 employees worldwide, it is a daunting task to connect the crowd of individuals within Pfizer in a meaningful way. However, the possibilities of today's network society have made it feasible to transmit potentially useful innovations across the globe while providing motivation and support to participating employees. Mayer describes this push to embed innovation-driving practices within the organization:

One big focus is to build a capability within the business to help everyone across Pfizer to think more expansively and be more innovative in their approach to their everyday work and the problems they see within their business unit. We have a framework we've developed and we try to share some of the best practices. We've developed a coaches network that helps support and incent people working across our business and drive innovative thinking at a grassroots level.<sup>95</sup>

These developments are at the heart of Pfizer's *Dare to Try* program. Launched in 2013, DTT encourages innovation as an integrated business practice by providing the framework and resources to take 'thoughtful risks' across the organization<sup>96</sup>. For Pfizer, technology is essential for expanding what would typically be a series of workshops into a deeply embedded process that can effectively and continuously engage the company's almost 80,000 employees worldwide.

Collaborative innovation networks are at the heart of Dare To Try's technological

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<sup>95</sup> Sell, 3.

<sup>96</sup> Imber, 125.

initiative to empower creativity at all levels of the organization. This program features a network of 500 innovation leaders known as the Dare to Try champions whose role is to facilitate creative collaboration across every business unit<sup>97</sup>. Located around the globe, these champions help develop ideas by providing tools and techniques while fostering a deep creative culture and entrepreneurial mindset<sup>98</sup>. Pfizer employees are encouraged to tap into this network through an online *Champion Portal*, where innovative ideas can get the attention they need through a digital ‘marketplace’ of mentors. Daniel Seewald, Senior Director of Worldwide Innovation for Pfizer, calls this portal the “Match.com for innovation facilitation.”<sup>99</sup> The champion network helps diffuse a centrally driven demand for innovative culture and practices to be deeply integrated across all sectors of business.

Additionally, Pfizer has been able to accelerate the Dare To Try mission through providing software for each employee to develop ideas not only with designated champions but any interested party across the enterprise. Collaborative ideation software developed by Batterii has been incorporated across the organization in order to support the mission of every employee being able to “innovate in the everyday”.<sup>100</sup> In return for normalizing the process of innovation within an organization, “employers get better innovators, employees obtain new influential behaviors and skills, and the organization’s overall performance is enhanced.”<sup>101</sup> This system allows every Pfizer employee to collaborate on innovation challenges and share resources across departments and vast

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<sup>97</sup> Imber, 63.

<sup>98</sup> Seewald, 15:05.

<sup>99</sup> Seewald, 45:00.

<sup>100</sup> Batterii, 2.

<sup>101</sup> Batterii, 2.

geographic spaces. Overall, the Batterii network and Champions Portal provide a scalable and sustainable framework for improving Pfizer's capability to harness the collective problem solving capabilities of the entire company and promote a corporate culture where employees feel free to be curious and experiment.

Furthermore, the Dare To Try program has taken initiative to expand the process of giving awards to innovators so that many employees are engaged in the voting process. An organization-wide technology platform was developed that lists and describes every nominated innovation from that year<sup>102</sup>. Through crowdsourcing the awards program, colleagues across the company become more engaged in the innovation process, and the organization benefits by enabling more diverse and specialized feedback than having a small innovation team judge entries from across all sectors of the company. This new model allows broader organizational input while also inspiring people through giving them broader exposure to the diverse creative work that is happening across the company<sup>103</sup>. Through a centralized voting platform where Pfizer employees use their computers to learn about different projects of innovative development and contribute feedback, participation in innovation is driven and embedded across the broad span of a large global organization.

Collaborative innovation networks and crowdsourced participation in awarding innovators shows the strong potential for increasingly networked organizations, to drive employee engagement and motivate the development of new ideas. Pfizer has been a

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<sup>102</sup> Imber, 161.

<sup>103</sup> Imber, 162.

company focused on innovating since its foundation, and technological developments have allowed for new possibilities in expanding the creative process to every employee on payroll. While innovation has always been part of the corporation's mission, Pfizer has to embed these practices deeply, especially through digital environments. An innovation executive at the company remarked that, "It's not enough to just do a series of workshops because that will come and go as quick as they're executed. But embedding it across the organization, so there's an ongoing flow of new ideas and experiments and most importantly, a network of champions across the organization that can drive it."<sup>104</sup> The global Champion Portal and Batterii network allow the company to permanently embed innovative practices while creating higher levels of engagement across a multitude of geographically disparate actors. Through the power of networks, Pfizer has taken clear action to champion widespread organizational innovation in light of today's rapidly changing and vastly global environment.

### 3.3 Case Study #2: Department of Works and Pensions

In the United Kingdom, the Department for Works and Pensions (DWP) is a leader in the movement to promote widespread innovative practices among employees. Created following the 2001 merger of Britain's Department for Social Security and the employment sector of the Department of Education, the DWP is the UK's largest public-service delivery department and is at the forefront of the fight against poverty. Since its merger, the

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<sup>104</sup> Seewald.



organization has been in the process of restructuring itself to be leaner and more focused while cutting the number of employees from 131,000 to 101,000<sup>105</sup>. To facilitate achieving this goal, the DWP has developed several innovative business approaches. This includes several developments that use technology to streamline existing processes, such as an interactive web-based portal for professional learning that enabled significant savings on HR expenditure, while empowering employees to self-manage their professional development<sup>106</sup>. In addition to developing innovative platforms that streamline existing services, the DWP created a framework with the core purpose of encouraging employee ingenuity in developing new 'lean' business practices.

The Department focused initially on decentralizing innovation to engage employees in the innovative process through using suggestion box systems, yet this approach was hindered by the lack of an effective infrastructure to ensure potential ideas were effectively developed and managed<sup>107</sup>. With so many employees to potentially provide useful contributions, the organization's director of innovation has said that, "People wanted to help make things better, and all we had to do was create a structured way for them to do that while providing them with an incentive to do so."<sup>108</sup> While money was tight during the process of becoming a 'lean' organization, the DWP has found a creative technological solution that encourages participation in a value-generating activity while providing motivation beyond financial incentives.

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<sup>105</sup> HMRID, 6.

<sup>106</sup> Id, 12.

<sup>107</sup> Burke & Mesaglio, 2.

<sup>108</sup> Burke, 64.

When organizations are looking for innovative ideas from their employees, they are faced primarily with two challenges. First, people need to overcome the mindset that participating in innovation is not part of their job<sup>109</sup>. To this effect, management must provide incentives, structure, and support to encourage participation. The second fundamental challenge in soliciting innovation from a crowd of employees is developing and selecting the most promising ideas from a multitude of fledgling proposals. In order to more effectively solicit ideas from employees, the DWP developed a platform using ‘gamified’ motivation that simultaneously encourages broad participation while helping select and refine the most promising concepts.

Brian Burke, a researcher of business outcome-driven enterprise architecture and IT organizational structures, wrote about the DWP’s innovation system as exemplifying the upside of the ‘gamification’ of innovation activities. Burke is an advocate of leveraging the wisdom of the crowd, saying it “brings many perspectives to the innovation challenge, and each represents a unique point of view that sees the problem differently.”<sup>110</sup> However, this is not possible unless the crowd is engaged, focused, and motivated. In this context, gamification means the use of experience design and game mechanics such as points, badges, and leaderboards to digitally engage and motivate people to achieve individual and collective goals.<sup>111</sup> In gamified innovation solutions, people are encouraged to submit bold ideas by gaining a sense of ownership and earning reputation or points as others choose to support their idea.

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<sup>109</sup> Burke, 85.

<sup>110</sup> Burke, 75.

<sup>111</sup> Burke, 6.

The Department of Works and Pensions successfully implemented elements of gamification when launching their online collaborative innovation community *Idea Street* in 2008. This platform employs competition and rewards to drive engagement and develop ideas into a refined set of potential projects that can be implemented<sup>112</sup>. A point system rewards users with a currency known as *DWPeas* for idea generation as well as contributions through all stages of development<sup>113</sup>. Users can invest points in others' ideas where they become shareholders in the long-term success of the innovation. In comparison to a suggestion box style system where only the idea's originator is rewarded, this architecture engages employees not just in the ideation phase, but also in development and support of ideas in the pipeline<sup>114</sup>. This relates to Pentland's praise of idea flow as leading to "engagement with and learning from others, along with the mutual sharing and vetting of ideas, generate the collective intelligence."<sup>115</sup> In *Idea Street's* social environment, employees are encouraged to discuss with each other how they think the organization can be improved. Recognition of strong contributions is passed along in a weekly newsletter that praises useful developments and encourages contributions to ideas that may need a little help to move on to the next stage<sup>116</sup>. User desire to accumulate *DWPeas* and gain recognition demonstrates how innovation systems can be set up to exploit human motivational factors beyond merely monetary rewards.

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<sup>112</sup> Burke & Mesaglio, 3.

<sup>113</sup> Burke, 76.

<sup>114</sup> Burke & Mesaglio, 1.

<sup>115</sup> Pentland, 44.

<sup>116</sup> Burke & Mesaglio, 5.

In regard to the success of gamification for driving innovation, Burke cites several promising statistics from the employment of Idea Street. In the platform's first eighteen months, approximately 4500 users participated and Idea Street projects saved the organization over \$34 million<sup>117</sup>. While around 1400 ideas were submitted during this trial run, only sixty-three of these projects reached implementation<sup>118</sup>. This means that while a very small percentage of ideas make it through Idea Street's innovation pipeline, these ideas are highly refined due to the collaborative development process and thus lead to organizational savings that average over half a million dollars each.

In 2012, the platform re-launched with new features and the number of active users soared from less than five thousand to well over fifty thousand<sup>119</sup>. The relaunch included additional gamification including a community leaderboard where the top ideas are celebrated. In order to reach this critical mass of users, an extensive marketing campaign was launched that encouraged participation, with the additional hope that users virally recruit other employees to the platform<sup>120,121</sup>. Furthermore, the DWP implemented 'idea mentors' who work with the teams to develop top ideas in a manner reminiscent of Pfizer's champion network.

Overall, Idea Street shows how members of an organization can be encouraged to participate creative power toward collective problems if provided with an appropriate framework. Gamification is an effective tool in engaging, motivating and focusing

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<sup>117</sup> Burke, 76.

<sup>118</sup> Ibid.

<sup>119</sup> Burke & Mesaglio, 76.

<sup>120</sup> Burke & Mesaglio, 6.

<sup>121</sup> Burke, 81.

innovative activities while providing the free space to experiment and take risks<sup>122</sup>. The competitive aspects of winning DWPeas and recognition show how an enterprise social network can be structured to provide motivation without increasing the R&D budget by spending on financial rewards. Investments in technology have been at the heart of the DWP's effort to become a more fiscally responsible and 'lean' company, and their innovation platform shows how network architecture has the power to streamline and expand creative practices far beyond employees of the organization's designated innovation team.

### 3.4 Workplace Dynamics of Collaborative Innovation

While Pfizer is a global corporation and the DWP is a government agency based entirely out of the U.K., both examples demonstrate how organizations are increasingly using digital tools to help their employees feel more freedom and engagement in the workplace, as they contribute new forms of labor value. While collaborative innovation platforms allow organizations to take advantage of surplus cognitive and creative power to advance both individual and collective goals, these systems also set up conditions for new levels of 'soft control', through codified social norms and levels of accountability. In the next chapter, collaborative organizational networks are discussed from the perspective of embedded power and control. Do these systems empower workers; or rather do they rather harness individuals' existing power in new ways to benefit the organization?

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<sup>122</sup> Id, 82.

# Chapter 4: Innovation Network Politics

## 4.1 Claims of Democracy Innovation Platforms

Of course, the platforms of Whirlpool, Pfizer and DWP were not designed as a radically altruistic or Marxist way of reimagining organizational structures. Rather, these systems were all driven by imperatives to become 'leaner', more 'organic', and more adaptable to environmental factors from the perspective of productivity. The Computerworld article discussing Whirlpool's innovation initiative cites a consultant who worked with the corporation as saying that, "Most times when you apply IT, you're trying to bring more discipline. In innovation, you're also always trying to support serendipity and creativity—to use IT to dramatically improve the odds of serendipity happening,"<sup>123</sup> However, innovation infrastructures *can* be imagined as trying to bring about discipline to the spontaneous so that it can contribute to the organization's bottom line. These systems try to provide concrete resources so that abstract, creative ideas can be converted into business-applicable innovative ideas.

Furthermore, the claim that Whirlpool is truly democratizing innovation is complicated by the discussion of motivating factors being used to drive engagement with their Innovation E-Space. A Whirlpool executive argues that receiving exposure and making connections across the company are inherently rewarding enough in lieu of financial incentives<sup>124</sup>. It is hard to believe that innovation was created to make a more democratic

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<sup>123</sup> Melymuka, 32.

<sup>124</sup> Ibid.

organization rather than a more profitable one, when management openly believe that innovators should receive no bonuses or perks since the thrill of achievement is its own reward.<sup>125</sup> Furthermore, the previously discussed case studies rely upon employee buy-in for non-financial rewards as well. Creativity scholar Florida argues that, "Surely some creative people are inspired by money, but studies find that truly creative individuals, from artists and writers to scientists and open-source software developers, are driven primarily by internal motivations, by the intrinsic rewards and satisfactions of their pursuits."<sup>126</sup> In addition to capitalizing on human nature as creative beings, platforms such as Idea Street in particular take advantage of peoples' competitive nature. While generating productive ideas on online platforms can attract the attention of management and increase chances of promotion, much of the process is based upon the intrinsic satisfaction of owning a large amount of DWPeas or being honored as top innovator of the month.

As companies adapted following the 1970's economic upheaval, they sought to extract additional labor power from their employees to maximize efficiency in a sort of Neo-Taylorist manner. In recruiting innovation champions, Pfizer exec Wendy Mayer says that management looks for passionate individuals. She explains that, "for them, the 10 to 15 per cent commitment isn't a burden. It's a pleasure."<sup>127</sup> Crowdsourcing scholar Howe argues that, "design by democracy, as it happens, isn't bad for the bottom line."<sup>128</sup> While corporations who promote their use of crowdsourcing innovation systems boast about

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<sup>125</sup> Ibid.

<sup>126</sup> Florida, 21.

<sup>127</sup> Imber, 108.

<sup>128</sup> Howe, 3.

democratizing their organization, it is quite clear that the predominant motive for their implementation is generating bottom-line value.

## 4.2 The New Labor Paradigm of Soft Control

Mumford refers to the coordination of populations toward efficiently accomplishing a collective task as creating a *megamachine*.<sup>129</sup> Rather than democratizing and flattening organizations by removing hierarchical control, communication networks exercise control in new and subtler ways in order to create functional megamachines out of diverse crowds. Terranova describes networks as self-organizing systems that bring about emergent behavior while facilitating, containing, and exploiting ‘the productive capabilities of the hyperconnected many.’<sup>130</sup> While networks provide free space for experimentation, they maintain *soft control* at the beginning and the end of this process. Per Terranova, “it is not soft because it is less harsh (often it has nothing gentle about it) but because it is an experiment in the control of systems that respond violently and often suicidally to rigid control.”<sup>131</sup> When systems are inherently adverse to rigid control that does not mean that control ceases to exist. Instead, control becomes embedded in the very architecture that determines how users interact with the network architecture.

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<sup>129</sup> Slack & Wise, 62.

<sup>130</sup> Terranova, 100.

<sup>131</sup> Id, 108.



As we have seen with autopoiesis theory, the self-organizing nature of networks leads scholars like Terranova to think of the mechanistic social processes in more organic terms<sup>132</sup>. However, the turn towards organic organizations is predicated on new ways of extracting labor power from workers. Rather than organizations fundamentally changing on a macroeconomic scale to adapt to environmental conditions, workers are being increasingly capitalized upon to provide the creative power that allows organizations to innovate and adapt. Rose discusses this imperative to channel individual goals into making organizations more flexible and productive:

For organizations to get the most out of their workers, from lowliest employee to highest manager, they should not seek to manage social relations to ensure maximum contentment. Instead, the organization should be reshaped so as to release the psychological strivings of its members, so that adaptability, innovation, responsibility, and commitment could be channeled into organizational success.<sup>133</sup>

Today, the reshaping of organizations mentioned by Rose is primarily actualized in a networked context such as within Pfizer and the DWP. Organizations and systems are not truly biological in nature, but the humans who operate them are. The challenge for management teams of the future is finding new ways to channel individual human effort into collective success.

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<sup>132</sup> Terranova, 98.

<sup>133</sup> Rose, 113.

## 4.3 Concluding Remarks

For competitive organizations, every technology that is researched and implemented has a pragmatic reason for existing. While allowing people to think creatively and collaborate with a diverse group of fellow employees helps drive their engagement with work, these technologies would not be nearly as widespread if they lacked clear tangible benefits beyond making workers happy. There is thus a dual sense of value for collaborative innovation platforms as they distribute agency that would normally be concentrated exclusively among management, while also generating flexibility and breakthrough ideas that benefit the same group of managers. Furthermore, they allow management the ability to maintain control while appearing to be less controlling since the design of the network systems themselves hold the power to control and monitor.

While the emergence of collaborative innovation systems allows employees to contribute creatively in a new way, there is reason to believe that they are also leading to a greater time commitment from workers, to the benefit of their employers. As previously mentioned, the reward for generating innovations is often intrinsic or social, rather than monetary. While companies such as Google have notably given their engineers one day out of the workweek to focus primarily on their own projects and new ideas, each of the case study organizations presented here build in expectations for workers to contribute creatively while performing all of their previous duties<sup>134</sup>.

While organizations may be becoming increasingly more networked and less

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<sup>134</sup> Davila, 67.

hierarchical, hierarchies of power have also transitioned, to be more significantly embedded within networks and technological platforms. While bureaucracy seems to be disappearing, some scholars argue that it continues to exist as embodied in ICTs and other organizational technology. Snellen uses the word infocracy to describe this transition, defining this term as, “networked organizations, process oriented, without vertical, functional hierarchies, but still with high levels of control, now realized through the information infrastructures.”<sup>135</sup> The critical technology scholar Langdon Winner would urge employees who put forth time outside of their usual responsibilities to innovate to stop and think about what the implications are of their company’s sociotechnical construction. Since technological conditions play a huge role in governing the human experience, members of networked organizations should question what the purpose of their online engagement is from an organizational standpoint.

In a similar manner, Surowiecki would warn that, “one critique of decentralization is that even if workers or frontline managers are given more control over their immediate environments, the real power will continue to reside in the hands of top management.”<sup>136</sup> Van Dijk echoes this concern in saying that while ICTs are sometimes heralded as democratic ‘technologies of freedom’, organizational leaders generally use them as technologies of control, central registration and surveillance<sup>137</sup>. Human ecologist Martin Kenney writes that ‘empowering’ employees often serves the function of weakening collective opposition to workplace leadership: “If workers can be made to feel responsible

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<sup>135</sup> Snellen, 179.

<sup>136</sup> Surowiecki, 213.

<sup>137</sup> Van Dijk, 105.

for the production process, old forms of resistance will be weakened, since workers may no longer see themselves in solidarity against management.”<sup>138</sup> Social monitoring systems as suggested by Pentland become less necessary when the innovative engagement of employees starts being tracked through online profiles within intraorganizational digital space- transparency of this type can lead to a kind of participatory surveillance.

Distributed creative agency is often presented in the context of pervading democratization, yet this dynamic is complicated by the way collaborative innovation platforms reinforce centralized power and bring about new ways of monitoring employees and extracting the maximum amount of individual labor. Workers who come up with ideas that generate profits for their employer should be fairly compensated from a financial standpoint, yet it is troubling how collaboration systems frequently leverage human competitiveness and desire for recognition to encourage participation in lieu of any monetary reward. This is particularly true in regard to the gamified Idea Street platform used by the DWP, where users ‘invest’ in others’ ideas, using what amounts to tokenistic, digital “Monopoly money”.

While the DWP is a public organization unlike the other case studies mentioned, it appears that private companies are heading toward more gamified innovation systems too, as executives such as Wendy Mayer of Pfizer are increasingly asking, “How can I add more playfulness to this so I can bring out more creative ideas?”<sup>139</sup> While it superficially may appear revolutionary that workplaces are extending employees new power to contribute in

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<sup>138</sup> Kenney, 99.

<sup>139</sup> Sell, 3.

creative and playful ways, the apparent power of technology to change and modulate social relations often conceals the fact that levels of control previously associated with management hierarchies remain deeply embedded within them.

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