Work reconsidered

Increasing productivity with humaneering (part 2) by James Pepitone.

A company's intellectual capital includes both human capital, the inherent potential of its employees to create economic value; and structural capital, the non-physical infrastructure that enables human capital to function. When we speak of human capital we might quickly think of employees, whereas human capital refers more specifically to the employees' potential to create economic value. This potential needs to be harvested, of course, which is why structural capital – infrastructure like an engaging organisation, efficient processes, effective systems, and a supportive culture – is so important.

As suggested by the aphorism, 'a rising tide lifts all boats', investments in structural capital tend to have a powerful leveraging effect on a company's investment in human capital. The company that enables its human capital with highly supportive structural capital, will realise higher levels of employee productivity, thereby maximising the yield on its human capital.

Work design is among the best investments in structural capital. Continuous improvements in work design during the past century have created unprecedented increases in productivity. Most of this investment has been made to apply engineering principles to standardise, mechanise, and automate the physical tasks of manual workers so as to increase efficiency, scale, and control, while altogether reducing dependence on employees. It is the success of these efforts that has reduced the number of employees who now perform predominantly manual work to one-tenth of their number in the 1950s.

As Peter Drucker wrote in *Post-Capitalist Society* (1993), "The new challenge facing the post-capitalist society is the productivity of knowledge workers and service workers" (p.83). He further makes the point that these workers now account for more than 80% of the work force in developed countries and their productivity has not improved in 50 years. "Unless we can learn how to increase the productivity of knowledge workers and service workers, and increase it fast, the developed countries will face economic stagnation and severe social tension. People can only get paid in accordance with their productivity," (p. 84).

Knowledge and service work creates more economic value when each individual worker adapts to each unique situation (or opportunity) and responds with a customised effort that seeks to maximise the economic value created. The employee transforms this opportunity into economic value through their own unique combination of capabilities deployed in a complex human process utilising inspiration, empathy, creativity, persuasion, and many other uniquely human behaviours.

Many organisations have learned through costly experience that the methods that increase the productivity of the physical tasks of manual workers are often counterproductive when applied to the knowledge and service workers' primary responsibility of creating economic value from opportunities. Standardising the performance of knowledge and service work removes discretion that may be vital for employees to maximise the value created for clients and customers.

Effective methods for improving the productivity of knowledge and service workers will need to focus, not on standardising tasks or replacing workers with machines, but on supporting a company's human capital so that employees realise more of their human potential to create economic value. This can be accomplished with a different approach to work design that utilises humaneering to enable workers.

Need for a new applied science

Part 1 of this article (Autumn 2014) discussed the origin of humaneering, an emerging applied science that utilises the inherent biological, psychological and social nature of employees to improve the productivity of knowledge and service work. Next, it discussed one of humaneering's many field trials within the operations of major companies, briefly recounting part of the experience and perceptions of a host-company corporate executive and his operations manager. The article concluded with the takeaway perceptions of the engineering-

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Figure 1

	Hierarchy of System Complexity*		
	Level	Added System Characteristics	Operational Issues
HUMANEERING ↑ Human sciences explain	7. Social	Shared value system, direction, and action Shared meaning Social construction (create meaning)	Collaboration, teamwork, spirit, synergy, culture, and transformation Development (constructivist learning)
	6. Human	Self-consciousness and self-concept Self-reflexive knowing Capacity to produce, absorb and interpret symbols (language, behaviour, culture) Sense of passing time Will, intention, trust, emotion, etc.	Sense-and-respond capability Education (cognitivist learning) Service work (perceive complex needs, then adapt resources to deliver response that creates value) Knowledge work (creation, discretion) Responsibility work (able to respond)
	5. Animal	Increased mobility and division of labour Self-awareness and personality Specialized sensory receptors Highly developed nervous system Knowledge structures (based on symbols)	Sense-and-react capability Training (behaviourist learning) Conditioning (standardization) Incentive/threat; reward/punishment Task work (do what when told)
	4. Cell	Living system (alive and adaptive) Self-maintaining Self-reproducing	Adapt to environment Workaround physical constraints Most-elementary living system
ENGINEERING ↑ Physical sciences explain	3. Machine	Cybernetics (closed system regulation) System control (thermostat) Process feedback	Most-complex machine system Autonomous control machines Stable, self-regulating systems
	2. Clockwork	Dynamic Cyclical events Simple motions – regular or regulated Equilibrium (balance)	Linear cause and effect Synchronous work Management by objectives Time-based work
	1. Framework	Labels and terminology Classification systems	Foundation of organised knowledge

* Based on Boulding, K. E. (1956). General systems theory—The skeleton of science. Management Science, 2: 197-208.

educated operations manager regarding humaneering and its application and potential.

This article builds on that picture of humaneering, first by discussing the importance of work design as structural capital, with no less compelling potential for the human side of operations than a century of work design on the physical side of operations has demonstrated. Next, it unpacks human work into two types of activity involved in all job roles, so as to illustrate that humaneering is substantially different yet complementary to engineering. Finally, this article concludes with a snapshot of several additional field-trial applications of humaneering, making the point that in virtually every operation, humaneering brings fresh perspective, new methods, new insights and new solutions that altogether result in productivity increases not available with engineering alone.

The perspective of humaneering through the experience of an engineer is purposeful, because engineering is applied physical science and the current basis for work design and management. The achievements by organisations made possible with engineering seem unending. And yet what can be overlooked in our admiration for engineering are its limitations. There are some things that engineering is not good at, not intended for, and not capable of achieving. One such limitation is the type of work that engineering can make more productive. Based

largely on the physical sciences, engineering is limited in its ability to explain, develop and apply human nature's biological, psychological and social capabilities.

One of the early system scientists, Kenneth Boulding, puts this limitation of engineering into perspective. In his seminal article, 'General Systems Theory: The skeleton of science (1956)', he appeals to scholars to recognise that each discipline of science "corresponds to a certain segment of the empirical world, and each develops theories which have particular applicability to its own empirical segment" (p. 197).

Then to organise and more clearly relate these empirical building blocks of nature, Boulding describes a hierarchy based on the complexity of system behaviour (see figure 1). This hierarchy is helpful in illustrating the limit of engineering principles and methods to explain, develop and apply human nature. It also suggests the needed scope for a new applied science capable of harvesting the full productive potential of people.

To manage companies during the industrial era, business leaders learned how to bring people together to do things in large scale with ever improving productivity. In meeting the challenges of that time, what we now know of as classical or modern management was conceived. Management pioneers like Henri Fayol, Frederick Taylor, Henry Ford and others, applied the operating principles of machines to workforce challenges. By 1915, most of the methods and tools of work design and management now utilised were developed.

History records the experiments at Western Electric's Hawthorne Works in the 1920s, as the first formal application of human science to human work. History also records that Frederick Taylor was sensitive to worker issues and tried to include more consideration for workers into his teachings, yet his mechanisation-minded business-owner clients had no interest, and the material was dropped. Even today, the better known human-science-based practice disciplines (eg, leadership, organisation development, organisation behaviour) are treated by most managers as little more than good ideas to consider.

Humaneering was first conceived in the late 1930s, as noted in more detail in Part 1. Yet only now do we have the ability to integrate the many relevant disciplines necessary to develop a humaneering applied science that is sufficiently robust to guide the design and management of work, performed by people to higher levels of productivity. In effect, humaneering closes the science-practice gap on the human side of business operations, both increasing the yield on human capital and simplifying the management of human work.

There is no disputing the fact that the physical sciences are more fully developed that the human sciences, and that engineering is more complete and robust an applied science than humaneering will be for decades. Humaneering's importance is established not because it has years of effective application and numerous high-profile success stories to share, but because it is the future of workforce productivity improvement and will take its users to the frontier of more productive people-dependent operations.

Managing with work design

Organisation members create economic value when they effectively fulfill one or more process roles. Each such role is the nexus of a complex work system within which individual workers perform. Each worker's performance is determined by two principal forces: (1) the extent to which the worker's motivation and capability for the work are engaged, and (2) the extent to which the worker's performance is enabled and constrained by the many work-system influences impacting the worker.

As many operations scholars have asserted (eg, Deming, Juran), a job role's work system has substantially greater impact on work performance than does the worker performing in the role. A skillfully designed job role can maximise every incumbent's potential for economic value creation, whereas a casual or fragmented design inevitably results in unintended performance constraints that limit potential. Not only does it yield higher performance, a skillfully designed job role provokes fewer people problems and requires substantially less time to manage. When existing roles are skillfully redesigned, the result is substantial improvement in performance and productivity, and in worker and manager satisfaction.

Humaneering-based work design begins with consideration of the worker's opportunity and their potential to utilise discretion to create value. Imagine that there are fundamentally two types of work, one that prohibits worker discretion (ie, standardised task) and another that depends on worker discretion (ie, adaptive responsibility). The first specifies the worker's activity, knowing that if the instructions are followed without variation that the desired result will be achieved. The second specifies the worker's opportunity and leaves the determination of appropriate behaviour up to the worker.

For simplicity, and to bridge a myriad of terms that are used to describe work, the scholars developing humaneering decided to call these two kinds of human work Type 1 and Type 2 respectively. Type 1 work is ideally designed for machine-like performance and relies on engineering principles to achieve this objective. Type 2 work is ideally designed for human performance and relies on humaneering principles to achieve this objective.

Type 1 work is a standardised task that requires non-discretionary behaviour such as performing specific work as trained, following instructions, or doing exactly as told. This work relies on worker attributes like endurance, obedience, diligence, and intelligence. Type 1 work was pioneered by Frederick Taylor and others in the late 19th and early 20th centuries, and is credited with enabling millions of people to transition into and become quickly productive at industrial work. Essentially, this work is designed to minimise the mostly physical contribution of workers to essential functions that cannot be economically mechanised or otherwise eliminated.

Type 2 work is an adaptive responsibility (ie, response-ability) that requires discretionary behaviour such as taking initiative, solving problems, or creating things. This work relies on worker attributes like expertise, commitment, initiative-taking, and creativity. Type 2 work was once limited to the roles of business owners and managers, but within the past century has come to be a substantial part of the work in most job roles. Essentially, this work requires the full potential of workers to perceive a complex situation and respond with the best possible action for maximising the economic value created.

All job roles are a blend of these two types of work, as illustrated in figure 2. Even a highly mechanised factory job role includes opportunities for workers to utilise their discretion, perhaps offering suggestions for improvement or supporting

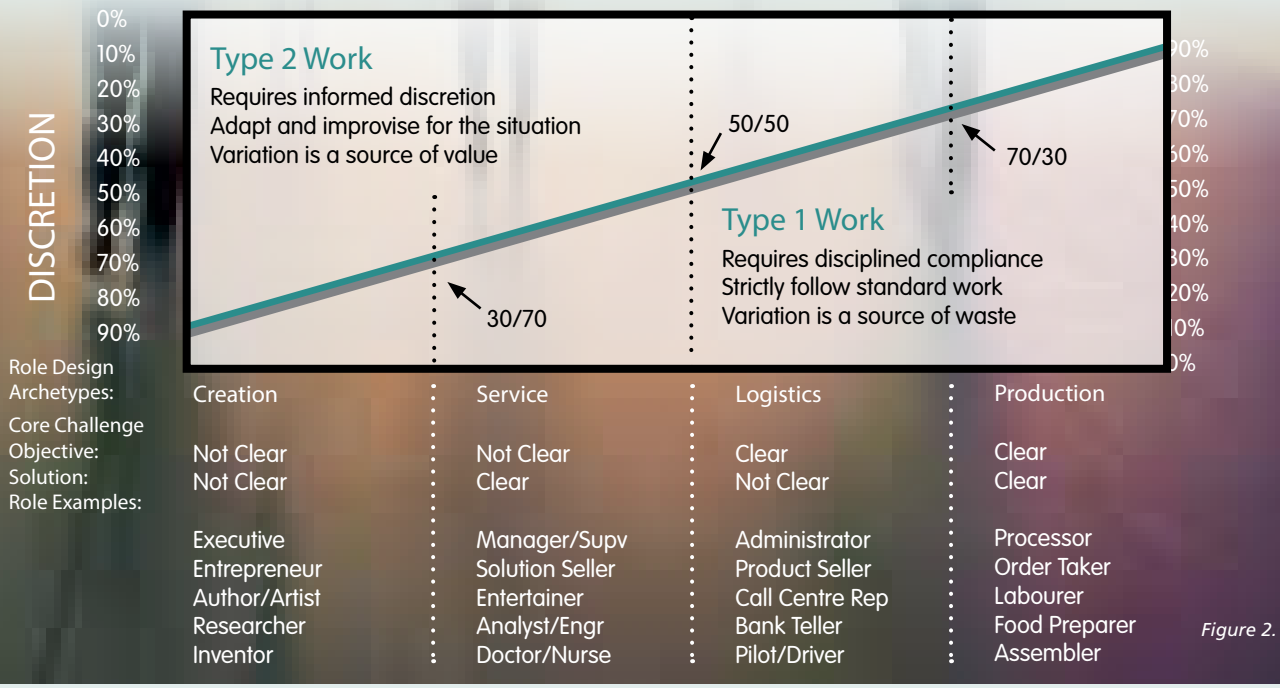

Figure 2.

a special project. Even a high-discretion client-development job role includes standardised tasks, such as required training or submission of required reports. It is often the proportion of Type 1 and Type 2 work that gives a job role its character and its appeal to individual workers. As figure 2 illustrates, this proportion also has significant impact on work design and on selection of fit-for-purpose workers.

One particular difference between Type 1 and Type 2 work illustrates especially well, how the design of each requires different work design principles. This difference is that for Type 1 work variation is a primary source of waste, whereas for Type 2 work variation is a primary source of economic value. This one fact makes clear the potential negative impact of misusing engineering principles to design Type 2 work, and potentially an equally negative impact of misusing humaneering principles to design Type 1 work. This distinction between Type 1 and Type 2 work has proven to be a critical insight that emerged from the humaneering development process.

Increasing productivity anywhere people work

Today's approach to work design and management strives to treat all work as Type 1, thereby ignoring most human potential and substantially underutilising human capital. This approach has been remarkably effective in delivering continuous productivity increases as the physical work of more and more manual workers was standardised, mechanised or eliminated. During this same period, the human potential to create economic value has been largely under utilised, in part contributing to the situation today where too many workers are not engaged in their work and not inspired to perform at their personal best.

The resulting economic and human costs weigh down today's organisations. Companies don't get the productivity they pay for and executives never see the business results their organisations are capable of creating. Widespread organisational norms today are under utilised human capital, human inefficiency and waste, worker frustration, low engagement, and now the inevitable result, a talent shortage, as workers seek alternatives to regular employment.

A steady stream of insights and advocates for dealing with this situation emerge from academia and the marketplace for ideas, yet typically fail to arouse management or over promise and under deliver. Academic research is by design fragmented, and it is rarely focused on needed solutions or field tested. Market hype turns insights into cure-alls that fall short, leaving executives with a choice of disappointing alternatives.

Humaneering's guidance flows from a research and development process that is thorough, dependable, continuous and sustainable. This process involves knowledge contributions by hundreds of scholars, practitioners and managers to create an easily accessible applied science for the human side of operations. The current version of humaneering's protocol for human work was remarkably successful in its Phase 4 beta application field tests within the operations of major companies. (See Figure 3.) The next development stage is commercialisation, wherein more extensive application will yield a version suitable for open public release, perhaps as early as 2020.

The application of humaneering utilises tools and techniques from anthropology, psychology, systems science and other disciplines that yield insights and alternatives not readily evident with today's management methods. The humaneering process focuses on the work, workers, and work environment. It involves workers directly, results in deep understanding of systemic causes, and tests alternative solutions to enable evidence-based management decisions. Management gets more precise understanding and more powerful options, resulting in lower risk, faster change, and new potential.

In its current stage of development, humaneering is suitable for application to design and improve people-dependent operations. Preliminary work is already underway to develop less complex 'how to' directions for common work and organisation-design challenges, and to create easily accessed management decision-support systems for managers and support professionals.

Because each situation is unique and always changing, humaneering is best applied with a systematic yet adaptable process and agile style of project management. There are two major phases. Phase one focuses on assessing the operation's

work performed by people, and involves data gathering and analysis, plus data synthesis and system mapping. Phase two focuses on redesigning this work system to make the desired improvement, and involves solution design, development, testing and implementation.

The key is to start somewhere where improved human performance has substantial leverage, and to experiment with what's possible with humaneering. This enables management to learn what works best in their organisation, while quickly enjoying the benefits of higher productivity. In time, as management's confidence with humaneering develops, it will begin to make sense to consolidate and further leverage improvements across additional operations.

The good news for management is that higher productivity human work is readily possible with humaneering, plus management will discover that its employees already have the essential capabilities this requires (ie, human nature). However, to access these capabilities, management will need to rethink how job roles are designed and managed so as to begin to enable people to create increased economic value based on their human qualities. Humaneering, the applied science of human nature, will guide management through this transition.

Figure 3

Examples from Humaneering's Phase 4 Application Field Trials*

Industry and Operation	Management's Objective	Humaneering Insight	Humaneered Solution	Remarkable Results
Aerospace: Project management	Substantially increase management's effectiveness	Why best practice development methods were failing to advance current management practices	Redesigned program around systemic methods that enabled and inspired professionals to develop	Immediate change in culture; productivity improved by 31% in first 6 months
Automotive: Component manufacturing	Increase profit margins; reduce conflict between cell group manager and engineering	Despite claims of support, engineering-function goals and incentive conflicted with support for production quality and productivity	Experimented with 100% support to demonstrate deficiency and potential increase to profit margin; realigned organization	Margins doubled from 7% to 14% within 60 days based on reduced scrap and operator efficiencies
Biotech: Hazardous fluid production	New production facility suffering 80% turnover in key operator role	Work environment not providing enough social psychological support for operators to endure challenging conditions	More precise recruiting with exposure to conditions and candidate matching, plus comprehensive work environment support	Turnover slowed to 20% within 3 months, plus 50% of new vacancies filled by prior employees
Healthcare: Hospital nursing	Resolve nursing job dissatisfaction and turnover	Management system discredited feedback from nurses and limited their professional-level work	Reconceived role, replacing tasks with responsibilities, including self-management and improvement	Inspired nursing; patient satisfaction increased to 4.7 / 5; errors reduced 62%
Industrial Supplies: Field sales	Increase sales volume and customer loyalty	Pressure for results over- shadowed support for high- performance human work	Guided middle managers toward more effective support for human work	Engagement soared; sales increased 62% over prior year
Pharma: Field sales	Increase sales revenue and sales per representative	Publicly ranking employees by performance demotivates most except for the highest performers, eroding the self-confidence of lower ranked	Provided low-cost one-on-one coaching to counter the demoralizing effect of low ranking on lowest ranked 200 reps	Sales revenue of these reps increased by 52% over prior year for annual increase of $68M
Plastics: Product production	Eliminate toxic impact of employee performance management system	Two-year-old best-practice performance management approach was poor fit for company's cohesive culture	Redesigned process around what employees felt would work best to achieve performance goals	Process welcomed; employees far exceeded all management goals
Restaurant: Chain table service	Create unique experience that compels repeat visits	Even excellent food and service is not enough to motivate customers with many good alternatives	Reconceived server role and process, focusing on customer experience and relationship with server	Over 40% of first-time customers revisited in 90 days; 3X increase in visit frequency
Retail: Electronics store sales	Increase sales volume and margins; stabilize salesforce	Store culture focused on control-driven metrics that actually undermined effectiveness with customers	Redesigned sales position, reducing standard tasks and increasing responsibility and customer-support tools	Next quarter sales up 37% and margins up 26% over prior year; turnover cut in half
Telecom: Customer service call centre	Reduce 120% turnover and improve customer service satisfaction	Recruiting excellent candidates, yet training was ineffective in preparing new hires for their work	Redesigned training to prepare new hires to far exceed current performance levels	Reduced turnover to below 30%; 70% of graduates exceeded best agents on floor
Telecom: Service installation	Resolve installer resistance to new scheduling process	Persistent antagonism in culture blocking needed improvements in service	Re-opened design process to involve installers and include their objectives	Process acceptance; established model for future improvements

* Limited data can be shared due to non-disclosure agreements that strictly protect client identity, findings, solutions, and results.

About the author

Dr James (Jim) Pepitone is the Managing Partner of DesignedWORK, a Dallas Texas based management consultancy that specialises in improving the productivity of people-dependent operations and serves clients across most industries and regions of the world. Dr Pepitone was instrumental in founding the nonprofit Humaneering Institute, and currently supports its humaneering field experiments and technology transfer. His career started with ten years in industry roles, including positions as VP of Sales and General Manager for publicly traded companies, and continued as a management consultant. Dr Pepitone is the author of four books and numerous articles, some of which discuss humaneering as it has evolved. His education includes a BBA in Industrial Mgt and MBA from the Univ of Texas at Austin, and an MS in Org Development and Ed.D in Org Design from Pepperdine Univ in California. Connect with Jim on LinkedIn at www.linkedin.com/in/drjimpepitone/ and email him at james.pepitone@designedwork.com. Learn more about humaneering at http://eanpc.eu/insights/Focus/82.