



BEYOND STUPID, SLOW & EXPENSIVE:

Division of labor soon will be supplanted by a new paradigm — the reintegration of work.

REINTEGRATING WORK TO IMPROVE PRODUCTIVITY

By Charles E. Lucier and Janet D. Torsilieri

Once upon a time, a C.E.O. sent his three top business-unit general managers on a quest for productivity, saying, “We must accelerate productivity improvements, or the velocity of this new age will surely overtake us.” After many days of searching, they came upon a strange house.

There they saw all the world’s knowledge: methodologies piled in stacks, fabulous tools flung here and there, experts chatting in the corner. Awestruck, they started sorting through things recognized and things unknown.

The first manager, seeing little he would acknowledge as new, set out for home, muttering, “My people are talented and knowledgeable. We can improve productivity on our own. We

need objectives, disciplines for driving value to the bottom line and hard work.”

The second manager, spying some pricing algorithms and production-scheduling tools far superior to those used in his business, hastily stuffed them into his briefcase and rushed back to headquarters to begin implementation.

The third manager wandered, talking with experts, exploring books and tools. “Ah, this is a symptom of the complexity of our times,” he thought.

“So much knowledge, spawned by technology, education, globalization and communications. How can I use these treasures in my business?” He noticed a strange diagram that described principles for structuring work that were

new, yet strangely familiar. Suddenly, he understood.

Three years later, the C.E.O. reviewed the results of the managers and announced that he had selected the third manager to be his successor. The C.E.O. asked his heir, “How is it that you were able to exceed all expectations, while also improving morale in your business — making your colleagues’ results, once acceptable by any standard, look slow, stupid and expensive?”

The third manager replied, “I have come to understand work in a new way and learned to apply the best in all things.”

The division of labor is dead. Once the most important idea for organizing

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work, Adam Smith's principle found its power in automation and specialization. But automation has already replaced people in the most task-intensive processes, and specialization undermines productivity in an increasingly knowledge-intensive world.

Companies' efforts to drive productivity today are hampered by the division of labor's unintended legacy: compartmentalized work manifested in functional silos of deep expertise and jobs shaped by process; multiple hand-offs, and the lack of alignment between workers and customers.

Successful managers are embracing a new set of fundamental principles for driving productivity: moving beyond the old divisions to reintegrate work, equipping workers with the best knowledge in the world, enabling them to function as experts across a broader range of activities and delivering value directly to the customer. Smart. Fast. Low-cost.

**UNDIVIDED LABOR:
REINTEGRATING WORK**

With the knowledge-based tools available today, there is no excuse for being stupid, slow or expensive. Imagine a manufacturer of a complex engineered product like switchgear. Dispensing with yesteryear's silos of engineering, marketing, sales and service, this company creates a new job: a "customer service engineer" (C.S.E.). Customers deal directly and exclusively with the same C.S.E. for about 90 percent of the volume — all but the most complex orders. Using a variety of knowledge-based tools, the C.S.E. helps customers understand

their requirements, make trade-offs and select the best options — together they make better decisions and get the order right the first time. The C.S.E. also provides an immediate price quote, checks the customer's credit, enters the order, loads the order into a plant's production schedule and promises an accurate delivery date. Profit increases because headcount and costly modifications de-

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cline while consistent pricing algorithms and premiums for speedy service improve price realization. Smart. Fast. Low-cost.

Some managers are already experimenting with reintegration work:

- **In manufacturing:** Workers who once managed only a single stage in the manufacturing process are now part of a team in the multi-machine cells of lean manufacturing, using methodologies to enhance quality and improve maintenance while sharing responsibility for output.
- **In delivery:** The traditional worker, once responsible only for delivery and stocking shelves at convenience stores and small grocers, now functions as an account man-

ager equipped with a sales methodology, the right inventory in his truck and tools for logistics, pricing, ordering and inventory tracking.

- **In applications engineering:** The product specialist, once supplemented by a costly salesperson, now manages her own accounts, equipped with basic sales methodologies, guidelines for evaluating issues outside her expertise and access to colleagues when required.

Reintegrated work overcomes the old divisions, delivering:

- Lower costs, faster decisions and improved service by eliminating hand-offs, reducing the need for expensive specialists and insuring the use of the best knowledge.
- Superior decision quality, risk management and control by putting proven algorithms in the hands of the people closest to the customer.
- Enhanced customer focus because broader jobs enable use of simple, powerful measures (quality, customer satisfaction, profit) aligned to customer needs.
- Motivated employees who exercise their judgment on behalf of customers and escape the drudgery of compartmentalized work — finding the motivation of meaning to work.

The customer's role can even be broadened. Equipped with the same knowledge-based tools a worker might use, customers can make informed decisions as an intimate part of the value chain. For example, the Dell Computer Corporation's premier customers have access to many of the company's internal support tools, enabling them to troubleshoot, price

and purchase.

Inviting customers to step into the value chain and use the company's knowledge not only reduces cost and increases customer satisfaction — it also enhances customer loyalty and facilitates differentiated service (different customers access different levels of knowledge) and differentiated pricing.

Opportunities to reintegrate work are being created by the growing availability of knowledge-based tools, advanced communications and an increasingly educated work force (and marketplace). To capture productivity benefits, however, companies need a new set of principles for structuring undivided labor.

LET THEM CATCH FISH: THE NEW PRINCIPLE DEFINING WORK

To update the old Chinese proverb: Give a man a fish and you feed him for a day; but *equip* him to fish and you feed him for a lifetime. From the fishing rod to the assembly line to the spreadsheet, work has always been defined by the relationship between a person's expertise and the tools he uses to do his work. We can equip a man to fish by developing his expertise, by providing tools so powerful that anyone can use them, or by some combination of the two.

Exhibit I depicts the possible combinations of individual expertise and company-provided tools for doing work (like fishing). On each axis, the greater the distance from the origin, the greater the knowledge. Individual expertise ranges from novice (at this activity, although possibly a

world-class expert elsewhere), to qualified (capable of successfully doing the work under most circumstances), to master (world-class expert). Company-provided tools range from processes to insure referral to an expert, to a methodology, to formulas describing exactly what to do (e.g., a computer-based algorithm).

Now, the simple principle: To structure work efficiently, match the tools to the expertise. If a methodology is available that enables a qualified fisherman to succeed, why pay more for the "master" fisherman? The highlighted combinations in Exhibit I yield roughly equivalent expertise, forming an efficient frontier for structuring work: more powerful than the combinations below and to the left, equally powerful and less costly than those above and to the right. Because the three models on work's efficient frontier have always defined well-structured work — the novice knowing *What*, the qualified person knowing *How*, those-who-need-to knowing

Who — we call them the "natural knowledge models."

Who relies upon high variable cost specialists: The expertise is in the fisherman. To effectively use *Who*, the company's processes must deliver the right world-class experts to each situation where they are needed (not only when workers *admit* they do not have the best knowledge but also when they don't admit it). *Whos* "masters" gain expertise by facing the most demanding challenges and discussing solutions with other experts. *Whos* power is in the match between problems and people: The more problems faced, the more capable the "master," the better the decisions, the more benefit for the company.

What — equipping low-cost, low-skilled workers with knowledge-intensive tools and formulas — has always provided the foundation for industrialization (both services and manufacturing). Today's *Whats* invoke a much broader variety of powerful tools that enable novices

**EXHIBIT I
THE NATURAL KNOWLEDGE MODELS**



Source: Booz-Allen & Hamilton

to perform as well as “masters.” Contemporary tools range from capital equipment to computer-based algorithms (e.g., to detect fraud or manage the trade spending of consumer product companies) to the entire layout and management system of a new fabrication plant (e.g., Intel’s “copy exactly”). Like their predecessors, modern *Whats* scale easily, have low variable costs and facilitate consistency and control.

How links powerful methodologies that go beyond simple process with educated, qualified personnel. *How* models have proliferated in the past 30 years — think of total quality management, Andersen Consulting’s Method 1 or demand flow manufacturing. *Hows* economics sit between those of *What* and *Who*: moderate fixed cost (usually training), moderate variable cost and more scalability than *Who* but less than *What*.

Which model to use? Where possible, use the lower variable cost, more scalable *What* or *How* over the higher cost, less scalable *Who*. Companies with virtually identical facilities — such as Genuine Parts’ warehouses, Exxon’s refineries or Intel’s fabrication plants — can use powerful *Whats* to create advantage over competitors with greater diversity. Some companies have begun to segment problems by complexity, using *What* or *How* on the 20 percent of situations that represent 80 percent of volume and restricting *Who* to the most complex and unusual situations that demand experts. For example, professional service companies drive productivity by deploying *How* for well-understood

problems, and reserving the more expensive experts for the most difficult and unique problems. Similarly, the best manufacturers supplement externally developed *Hows* and *Whats* with small internal teams of world-class experts deployed to improve operations at selected plants.

GETTING TO SMART, FAST AND LOW-COST

Leveraging the knowledge models for improved productivity and organizational effectiveness requires three new disciplines:

1. Use the *best knowledge to serve customers.* Using the best knowledge improves performance. For instance, fraud detection algorithms reduce losses more than the best experts could. The reliability-centered maintenance methodology increases uptime of key equipment more than conventional preventive maintenance does. Analytical pricing algorithms used to supplement “pricing gurus” improve price realization beyond what the most knowledgeable team can do on its own.

Where can powerful new knowledge be found? Though few of us like to admit it, most of the best knowledge lives outside our own heads. Even large and successful corporations reach beyond their own borders for the best knowledge. For example, the General Electric Company has driven tremendous productivity gains by deploying powerful, externally developed *Hows* across its diverse business portfolio — e.g., demand flow manufacturing, quick service/quick response and total quality management.

Surprisingly, using the best knowledge — instead of trying to create it — generates a learning windfall for workers. The investment banker equipped with the best bond-structuring algorithms, the best methodologies for interacting with local authorities and the best templates for structuring deals can direct her creativity toward serving the client — engaging in dialogues with colleagues about how to apply knowledge and learning-in-doing along the way.

Instead of undisciplined sharing of current practices, the investment banker’s learning begins with the best knowledge available and continues through her dialogues with other practitioners about how to apply the understandings. It takes discipline to start with the best *Who*, apply the best *How* or use the best *What*. Few of us readily admit where our expertise is not the best.

2. Introduce new best knowledge in waves. Using best knowledge requires a lot of change. Each time we introduce new knowledge, we ask workers to adopt a new mind-set about everything they do at work: analytics (how they think), processes (how they work and relate within and outside the company), organization (where they sit versus customers, other functions, suppliers, etc.), systems (tools they use) and measures (what they optimize, how they are evaluated).

To help workers adapt, introduce best knowledge in waves by deploying one integrated model at a time — e.g., a *What* to improve pricing, then a *How* to manage accounts, and then

possibly an improved *What* for pricing — rather than in a continual process. Waves enable the focus, effort and leadership required for dramatic change, as illustrated by G.E.'s success with the introduction of *Hows* across its businesses.

3. Create better jobs. To really drive performance improvements, frame the opportunity around job definitions, not simply the use of knowledge. Ask not, "What's the task?" or "What needs to get done?" but instead, "How can we structure work into broader jobs that take full advantage of the best knowledge to create customer value?" The result will be the creation of completely new, previously unimagined jobs, and the elimination of many existing ones. Creative elimination.

With this mind-set, no job is safe from change. For example, although the brand manager job has served consumer product companies well for 40 years, executives should ask, "How should sales and marketing jobs be defined to take full advantage of analytically based marketing tools to serve today's large, sophisticated customers?" With the emergence of genomics tools, combinatorial chemistry and high-throughput screening, pharmaceutical industry executives should ask, "How should traditional jobs in R&D be redefined?"

THE BEST-KNOWLEDGE-USING COMPANY

Internet business models. Intensifying

competition. Rapidly changing value chains. All companies vulnerable. The survivors will employ the knowledge disciplines — best knowledge, introduced in waves, through new jobs — to satisfy customer needs more effectively than competitors.

These disciplined survivors need a new organizational vision: the best-knowledge-using company. Successful best-knowledge-using compa-

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nies increase productivity more rapidly than competitors do, delivering superior value propositions to customers, owners and employees. They systematically scan for the best knowledge in the world, introducing each wave of new knowledge through one of the three natural models. They restructure jobs to focus workers on using knowledge to improve the value that customers receive. Where customers and suppliers can help the company use better knowledge more effectively, they will either outsource

or — like B.P. Amoco P.L.C. with Schlumberger — invite their best-knowledge-using customers or suppliers to partner in the development of new knowledge.¹ Although these companies may also create some of the best knowledge in the world, they will understand that knowledge created but not used has no value. They will focus the broader organization on "use" while targeted teams drive knowledge creation. The relentless drive to use the best knowledge in the world to benefit customers may even gain a best-knowledge-using company recognition as a strategic innovator that changed the rules of the game in its industry, as did Wal-Mart Stores Inc. under Sam Walton or the Nucor Corporation under Ken Iverson.

The best-knowledge-using companies will also be the best employers. Workers will find the motivation of meaning in their work, born of the opportunity to tangibly help customers and to improve the world. They will also learn, but few people outside the walls of academe find their own learning more motivating than the chance to contribute. These best-knowledge-using companies will also generate the superior growth and profitability that provide attractive rewards to employees today and opportunities for careers of increasing responsibility tomorrow.

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¹ Steven E. Prokesch, "Unleashing the Power of Learning: An Interview with British Petroleum's John Browne," Harvard Business Review, September-October 1997, p. 147.