FOREWORD

When we launched *Learning to See* in the summer of 1998 as the first publication of the Lean Enterprise Institute (LEI), we urged readers to start down a path toward perfect operational processes by mapping the value stream for each product family within the walls of their facilities. Our objective was to raise the consciousness of many managers from point improvements at the process level—creating cells, reducing set-up times, implementing 5S, improving the process capability of individual steps—to improvements in the performance of the entire value stream. We called this progressing from *process kaizen* to *flow kaizen*.

In the years since the launch of *Learning to See*, we've introduced additional workbooks describing how to introduce truly continuous flow in cellular production activities (*Creating Continuous Flow*) and how to implement a lean materials-handling system that supports continuous flow (*Making Materials Flow*). We've also extended the mapping process for product families far beyond the walls of individual facilities to encompass entire value streams (*Seeing the Whole*).

Now we are ready to move beyond the value stream for individual product families and take on production control for all of the product families within a facility. We call this the leap to *system kaizen* because it ties together the flow of all products through a facility by means of a lean production-control system. To do this, many facilities will need to convert from traditional Material Requirements Planning (MRP) systems that schedule each activity within a facility and push product ahead to the next activity. Others will need to move beyond simple pencil-and-paper schedules or homegrown pull systems that do not effectively control or level production. In either case, the critical need is to transition to a rigorous *pull system* where each production activity requests precisely the materials it needs from the previous activity and where demand from the customer is *leveled* at a pacemaker process to smooth production activities throughout the plant.

To help you make this leap, we have asked Art Smalley to share his years of lean implementation experience. Art was one of the first foreign nationals to be made a permanent employee of the Toyota Motor Corp. in Japan where he worked at Kamigo Engine Plant, Toyota's largest machining operation. In 1994, Art left Toyota to become director of lean production at Donnelly Corp., an American automotive supplier with more than a dozen plants worldwide. In 1999, Art moved to McKinsey & Co. where he was a subject-matter expert on lean manufacturing and manager of McKinsey's Production System Design Center. In the course

of his duties over the past 20 years, he has advised hundreds of facilities worldwide across a diverse set of industries on how to take a lean leap. In mid-2003, Art left McKinsey to spend more time at home with family, to write educational material on lean manufacturing, and to work directly with firms attempting a lean transformation.

We have warned in each of our workbooks that the step we are describing is harder than the steps required in previous workbooks, and we must offer this caution again. A truly lean production-control system that rigorously controls production at every step and levels demand from the customer has proved a great challenge for most firms. As a result, we usually see that this is the last element attempted in a lean transformation. If this is true in your case, you are in luck. In *Creating Level Pull*, Art has provided all of the basic knowledge you will need to get started in creating a lean production system in your facilities. And he has carefully constructed the workbook to be easily used by firms already far along with process kaizen and flow kaizen.

On the other hand, if you are just starting your lean transformation you also are in luck. Veteran lean practitioners usually urge firms with sufficient process stability to start their lean transformation by introducing lean production control with leveled demand as a system kaizen before moving to flow kaizen and process kaizen. If you are in this situation, we hope you will summon the courage to take the leap. The benefits for your business will be enormous and all of the knowledge you need is summarized here.

Given the nature of your challenge—wherever you are starting—we are anxious to hear about your successes as well as your difficulties and to connect you with the Lean Community at www.lean.org. Please send your comments to clp@lean.org.

Jim Womack, Dan Jones, John Shook, and Jose Ferro
Brookline, MA, USA; Ross-on-Wye, Hereford, UK; Ann Arbor, MI, USA;
Sao Paulo, SP, Brazil.