Recovering Redundancy in a Just-in-Time World

by Ralph C. Martin

Any parent who has packed a diaper bag will know the importance of redundancy. Our dear aspirants of the next generation are full of surprises at the most unexpected times. While the 4th, 5th and 6th diapers on a half day visit to Grandma's house would not normally be needed, their awkward stuffiness elicits some peace of mind.

In a similar vein, my colleague, Evan Fraser, in the Geography Department, reminds us about the strange dream that so much troubled Pharaoh in Biblical times (Genesis chapter 41). Joseph an astute 30 year old prisoner from a far-away farming family interpreted the dream. Seven fat cows were eaten by seven thin cows and seven well filled ears of corn were devoured by seven mostly barren ears of corn. Joseph told Pharaoh that the double alert required immediate attention because the imminent seven years of plenty were to be followed by seven years of famine.

A specific instruction from the dream was to "let Pharaoh look out a man discreet and wise, and set him over the land of Egypt … and take up the fifth part of the land of Egypt in the seven plenteous years." Pharaoh not only believed Joseph but promoted him to second in command and put him in charge of national grain production, storage and subsequent allocation. Not bad for a jailed farm kid in a strange land.

It is interesting that one fifth or 20% of grain was to be set aside. Today, thousands of years later, it is generally accepted that if the global stocks to use ratio, for wheat, creeps under 20%, food commodity prices will rise. In other words, if we are storing less than 20% of the wheat that is consumed annually there is a risk of having too little for unexpected contingencies and therefore prices will go up. For corn, the comparable number appears to be under 12%. For soybeans, the critical level is below 10%.

This month, the Cereal Supply and Demand Brief of the Food and Agriculture Organization of the UN www.fao.org/worldfoodsituation/wfs-home/csdb/en shows that "the overall world cereal stock-to-use ratio is projected at 20.5 percent, down 2 percentage points from 2011/12 and only 1.7 percentage points above the 2007/08 low of 18.8 percent."

In our time of squeezing costs to maximize efficiency, storage or redundancy is not often seen as progressive. Nassim Nicholas Taleb, author of The Black Swan and Antifragile, says “redundancy is ambiguous because it seems like a waste if nothing unusual happens. Except that something unusual happens – usually.”

Food production has never been predictably and consistently on target. For much of history there was too little and there have also been years of overshooting. However, the current game changer is climate change. When crops are vulnerable, probabilities are increasing that weather will be more variable with too little or too much precipitation and temperatures that exceed or drop below optimal levels.

The Insurance Bureau of Canada reported $1.6 billion insurance costs for catastrophic events in 2011, following similar unprecedented payouts which were above $1 billion in each year of 2010 and 2009. Extreme weather is the biggest culprit but unusual small weather events also push up costs. They note that in Canada, the average temperature increase was 1.3°C from 1948 to 2007, which was double the global average increase.

Redundancy may be confused with waste. However, excess production for storage can be made available in stages for consumption, while fresh stocks are moved into storage. It is true that storage bins and/or warehouses require extra labour, materials and energy to build and maintain. Nevertheless, to adapt to climate change and other surprises, the designation of resources for preparing and preserving is prudent. There is a business case for doing so at household, community, organizational and national scales.

Many commercial products, including food, flow from production to processing to distribution and finally to retail in a Just-in-Time continuum. Huge data files, crunched with expert software, facilitate these efficiencies to avoid storing excess inventory. Such calculations are bang on when the emerging future behaves like the past. It’s even possible to program for small wobbles or predictable vagaries such as Black Friday and December.

In our Just-in-Time world, unusual events caused by weather or other disruptions may become increasingly debilitating. Being prepared for periods of harshness requires a dash of Just-in-Case. We’re not smart enough to safely rely on an exclusive Just-in-Time

strategy. In this relatively benign and prosperous oasis of time in Canada, it is still possible and advisable to commit some resources to redundancy.

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