



CATASTROPHIC IMPACT AND LOSS

The Capstone of Impact Assessment

KEVIN D. BURTON



CRC Press
Taylor & Francis Group

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PREFACE

With the publication of *Managing Emerging Risk, The Capstone of Preparedness* in 2011 by CRC Press, my publisher and I set out to deeply consider the notion of risk and what constitutes a risk assessment. In that volume we explored the complexities and wild variance found in what passes for many risk assessments today. We developed scenarios to introduce the reader to areas of critical thinking around probability and possibility, and ultimately proscribed a method that evoked an admixture of data-driven risk modeling and structured narrative around new risk.

Amazingly, in the six months after *Managing Emerging Risk* was published, many of the scenarios came true, and other, more menacing risks emerged. The publisher and I agreed that the volume was a timely and important piece of literature in the ever-changing field of emergency management.

This volume, *Catastrophic Impact and Loss*, is the second stone to be laid in a path toward a more mindful practice of emergency management, with a focus on the impacts caused by risk. Unlike risks, which are hard-to-quantify future events, impacts can be measured, and this book illustrates a complete approach to doing so. While we can only wonder to what standard our industry will ultimately hold impact assessments, it is safe to say that, until now, there has been no such material presented that so completely considers what it means to understand impacts.

The reader should consider this volume with its sister book, *Managing Emerging Risk*, to truly understand the twin capstones of our work as emergency managers; to prepare for risk both probable and possible; and to understand impacts that are utterly knowable.



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First, this book is for Athena, my daughter and own Goddess of Wisdom and War, and my wife Adriana, who supports me on a sea of strength and adoration. Next, I thank my father, Dr. George Burton, to whom much is owed in his support and contribution to my thinking around the challenging matters found in this volume. Finally, Jason Philo, my editor and research assistant, is owed a fantastic debt of gratitude for suffering many long days working and reworking this book so that it comes to the reader as clear as a clarion call.



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ABOUT THE AUTHOR

Kevin D. Burton has been an active practitioner of the business continuity and disaster recovery disciplines since 1994. As a senior consultant at one of the “big two” disaster recovery consultancies, he had the responsibility of servicing the unique needs of E-businesses and highly mature n-tiered application architecture frameworks in the late 1990s. During this period, his clients included May Company Stores, Cattelus Corporation, Sun America Financial, Homestore.com, Dole Foods, Science Applications International Corporation (SAIC), and PeopleSoft.

In 2001, he was an advisor to the CEO of Toyota Motor Sales as an expert in information technology strategy and governance with respect to business continuity and disaster recovery. After 9/11, his role was enlarged and he became responsible for building a sustainable governance process for business resiliency worldwide and delivering a redundant data center solution for Toyota’s U.S. operations.

Building on the concept that 9/11 pushed disaster recovery practitioners into the realm of emergency management within the private sector, Mr. Burton began to develop a broader, more holistic approach to private sector emergency management and created a small firm called Burton Asset Management. As the principal of this firm, he has served as an executive coach, trusted advisor, and program manager for Oakley, The Arizona Department of Transportation, Maricopa County Department of Health, Pulte Homes, Standard Pacific Homes, and Triad Financial Corporation. In addition, he enjoys deep relationships with consultancies in the disaster recovery community including IBM, SunGard, and Gartner Group. He directly advised the Gartner Group and Cisco Systems in and around global systems deployment and risk management for American Express, Caterpillar, and Baxter Pharmaceuticals.

Burton’s experience ranges from G100 companies with revenues in the billions to regionalized medium businesses and local small businesses with 5 to 25 employees. His projects consistently include architecting and delivering business and technical requirements for strategic, sustainable, and cost-effective disaster recovery. His broad range of experience has helped clients address many issues to increase their IT process efficiencies or to address business process needs, staff and governance issues, and business-to-IT communication. Direct relationships with agencies in the

public sector and other organizations have a built-in tradition of employee safety, risk mitigation, and a clear foresight into the risk of today as well as tomorrow.

Articles by and about Mr. Burton and his company have been published in *GQ Magazine Australia*, *Continuity Insights*, and *Disaster Recovery Journal*. Apple Computers recently profiled Burton Asset Management because of the company's innovative approach to risk management.

Today, Mr. Burton is an avid practitioner, speaker, and student in the field of emergency management who has most recently consulted for Honeywell, Inc. and other financial institutions and large publicly traded companies.

In Mr. Burton's first published textbook, *Managing Emerging Risk* (CRC Press, Boca Raton, FL, 2011), he developed a theme that has emerged from his clinical experience; namely, that a new paradigm for evaluating and "connecting the dots" is necessary if we are to successfully deal with emerging threats. This paradigm relied heavily on lessons that can be learned from what (at least at first) may have seemed to be a strange bed-fellow: the marketing industry.

Here in *Catastrophic Impact and Loss* Burton introduces a whole new lexicon of terms that will intrigue and inform the reader, and a solid prescription for conducting impact assessments that is thorough, complete, and unlike any other published materials in the field.

Taken together, the two volumes, *Managing Emerging Risk* and *Catastrophic Impact and Loss*, signal that the emergency management student and practitioner can move beyond the threats and impact du jour and into a mindful state of critical practice in the opposing worlds of managing the probable and possible risks of our futures, and understanding the knowable impacts of our present.

1

The Postmodern Impact Assessment and Problems of the Mind



1.1 KEY TERMS

Risk	1.3
Impact	1.3
Risk assessment(s)	1.3
Impact assessment(s)	1.3
Disaster halo effect	1.3
Loss of value	1.3
The digital age	1.4
The information age	1.4
The industrial age	1.4
Fordism	1.4
Taylorism	1.4
Postmodernism	1.4
Viral	1.4
GPS	1.4
EFT	1.4
Telemetry	1.4
Fundamental flaw	1.4
Evolution of impacts	1.4
Globalization	1.4
Curator	1.6
Wabi-sabi	1.6
Ephemera	1.6
Cabinets of curiosity	1.6
Ikebana	1.6
Kunstkammer	1.6
Taxonomies	1.6
Thesauri	1.6
Nostalgia	1.6
Uncanny	1.6

1.2 OBJECTIVES

After reading this chapter you will be able to:

1. Describe the difference between a *risk assessment* and an *impact assessment*.

2. Discuss how the current period in which we practice has given rise to a new set of circumstances in the area of impact assessments and the unique challenges these changes present.
3. Illustrate an understanding of the fundamental flaw in our current approach to impact assessments and provide examples of specific factors that quantify the underlying problem.
4. Provide an example of the evolution of impacts as they have manifested themselves in today's practice of impact assessments.
5. Discuss how looking back at similar times of change in history can yield clues for critical thinking and exploration to the way in which impact assessments could be conducted looking forward.

1.3 OVERVIEW: RISK AND IMPACTS

This is *not* a textbook about **risk**. Risks are both probable and possible threats and hazards that place what is valued in harm's way. This is a textbook about **impacts**. Impacts are best understood as *that which will be lost or damaged* as a result of a risk manifesting itself. The two terms are easily confused and often mistakenly taken to mean the same thing. However, the important difference between the two is that risks can be estimated based on probability or projected as scenarios based on possibility, whereas impacts can be enumerated as value lost, capacity lost, capability lost, or other values that are not probability based at all—we can estimate impacts much more accurately than risks because impacts are not enumerated based on what might be in harm's way; impacts are, when well analyzed, enumerated on what *will* be in harm's way.

Simply put, to consider risk is to consider what *might* bring us harm, whereas considering impacts brings into focus what *will* be in harm's way. Risk is best understood in terms of probability and possibility. Impacts are best understood in terms of actuality and fact.

Given this understanding, it is important to differentiate between a risk assessment and an impact assessment ([Figure 1.1](#)).

Risk, according to *Merriam-Webster*, is:

1. The possibility of loss or injury (peril),
2. Someone or something that creates or suggests a hazard,
3. The chance of loss, or the perils to the subject matter of an insurance contract; also, the degree of probability of such a loss.¹



Figure 1.1 Key concepts in this chapter include understanding the difference between risk and impact studies and a discussion regarding the broader context of impacts in our field.

As understood and managed in the fields of business continuity, emergency management, and counterterrorism, risk is most readily expressed as “someone or something that creates or suggests a hazard.” The emphasis on *something* or *someone* posing a hazard is a definitive element across the three professional fields and is most often captured in the work product referred to in our profession as a **risk assessment**. Threats and hazards are estimated in a risk assessment, e.g., computer hardware outages to the catastrophic possibilities of tornados and terror attacks. Risk assessments are often completed by building scenarios² and creating risk assessments that inform stakeholders about the *threats and hazards that put their organizations at risk*.

Impact assessments are entirely different in that they inform our stakeholders about what goods, persons, or other important items *are in harm’s way*. Neither a risk assessment nor an impact assessment is a

disaster recovery plan (DRP), business continuity plan (BCP), or an emergency response plan (ERP).

* * *

A risk assessment tells us what might cause harm, and an impact assessment tells us what would be damaged, destroyed, or otherwise *lost*, as a result.

* * *

To be *at risk* is to be in harm's way. A risk assessment expresses *what will bring our constituents and us harm*. Impact assessments inform us about *what is in harm's way and what is at risk of being damaged or lost*. There are many possible imagined and unimagined risks that threaten our organizations, communities, and nations. There are also many ways to evaluate the people, processes, properties, and perceptions that are in harm's way and how they can be *impacted* by the manifestation of risk.

Impacts are much more realistic manifestations of threats than the notion of risks. While risks may or may not materialize, once they do, the reality of the impacts (however we have calculated them in an impact analysis) become very real. Any professional who has assessed the impact of a pandemic, pathogen-based attack knows that this work is much more specific than any imagined risk. The work of an impact assessment in this area moves from the abstract to a specific reality.

To elaborate on the example just given, working on an impact assessment for a pandemic or pathogen-based attack brings several vague concepts into sharp focus: the closure of schools, the near-immediate surge on medical facilities and hospitals, the gruesome task of separating a healthy parent from the family to care for an infected child, the red tagging of homes and mandatory quarantines, and ultimately the massive loss of life. The impact assessment shifts abstract ideas from the risk assessment into real impacts. As professionals these are the hard truths and inescapable impacts we must consider when discussing them (Figure 1.2).

* * *

In short, to conduct an impact assessment is to consider the profanity of havoc. The job at hand requires professionals who are able to objectively measure what happens when objects degrade from order and fall into chaos—even when required to do so under duress!

* * *



Figure 1.2 The differences between risks and impacts are not apparent, as this photo illustrates. A baby playing with an electrical outlet has a risk of being injured. However, to what degree, if any, would those impacts be felt?

Managing Emerging Risk, written by this author in 2011, was about the current world of risk and the necessity to change our methods in order to predict postmodern risks, thereby providing more valuable and true-to-life risk assessments. In that textbook, the term *disaster halo effect* is introduced to clarify the knotty problem of one manifested risk creating another manifested risk. The **disaster halo effect** is “the recognition that modern threats exhibit more than one ‘event’ and multiple outcomes that can be emergent or evolving.”³ The disaster halo effect establishes that an earthquake (one risk) leading to a tsunami (another risk) is *not an impact*—it is part of a larger disaster halo effect. The tsunami striking another island is *still* not an impact; again, this event is *part of the larger disaster halo effect*.

To understand impacts is to understand what damage was done (not what caused it) as a result of all the events within the disaster halo. Therefore, the economic loss, damage to environment, and loss of life

resulting from the tsunami would be *impacts* of the tsunami, with *impacts* from the earthquake being enumerated separately, while all being part of the larger disaster halo event.

1.3.1 Why Risk Assessments and Impact Assessments Are Different

This book is about understanding what is *truly* in harm's way, to what degree, and creating a means of providing a more accurate impact assessment. An impact assessment is a key program deliverable that informs our objectives and shapes our practice, based on understanding the common values and goods at risk belonging to our stakeholders. Risk assessments are only the first part of understanding potential terror attacks and disasters; impact assessments are the other half of that equation, i.e., understanding the impacts that stem from those events. Taken together, the risk assessment and the impact assessment are *the foundations for building a sound response program*. If both of these deliverables are not completed, we have only done half of our job, and we could well be starting off our programs on the wrong footing, leaving us unbalanced and ultimately, unprepared.

People, processes, property, and perceptions are the common values and goods that are in harm's way. These values and goods can be treated as assets and enumerated based on geographical location, value, and density. Inaccurate understanding of impacts can misinform the response effort and unhinge the objectives of any business continuity, emergency management, or counterterrorism planning effort that is undertaken once risks and impacts are understood.

* * *

In the fields of business continuity, emergency management, and counterterrorism the objectives influenced by an impact assessment may be very different from one field of practice to the other.

* * *

However, to be clear:

1. A risk assessment calculates and establishes probable and possible scenarios and rates them based on likelihood.
2. An impact assessment gathers data about the valued people, processes, technologies, and other goods in harm's way and ranks them based on importance or criticality.

1.3.2 Approaching the Impact Assessment

While it is often assumed that the current approaches to impact assessments are effective, reflection on recent catastrophic events (both man-made and natural) reveals that our current practice in these fields should be critically examined with an eye toward improvement. Recent events, such as the Amazon cloud computing data center outage of April 21, 2011; the Japanese earthquake on March 11, 2011; and the attempted assassination of Congresswoman Gabrielle Giffords by Jared Lee Loughner on January 8, 2011, have invigorated the national conversation, as well as our professional dialogue, regarding impact assessments due to the scale and scope of impacts felt from these catastrophes.

The nature of impact has evolved across the practices of emergency management— from private sector business continuity planning, to information technology disaster recovery planning, to public sector emergency response planning and counterterrorism. The original goals of scenario planning and the historical roots of our profession were to protect shareholder value. Today, there is no question that we have progressed from simply measuring potential financial, brand, or compliance impacts, or loss of life, injury, and property damage impacts, to giving consideration to a much wider array of impacts.

Not understanding impacts creates a gap in the response planning process that leads to the potential for impacts that *were not even considered as part of the original plan preparation process*.

We are charged with stewarding our profession toward better levels of performance, inclusive of the challenges we face. This requires critical thinking, critique, and an honest measure of our past results. In turn, it also requires that each of us, on our own terms and under the consideration of our current constraints and willingness, choose to move our thinking forward, consider future changes to the current form of standard practice, and implement new ideas. This book proposes evolutionary ideas and concepts for the reader's consideration. Meanwhile, the rapid change surrounding the dynamics of risks and impacts soldiers on.

* * *

Ignoring that impacts have evolved is to put our head in the sand and ignore that the world has changed around us, and that our practice must evolve with it.

* * *

When we accept that a comprehensive impact assessment captures our objectives, we must then confront the notion that our objectives may be very different now than they were 20 years, or even 2 years, ago. In this chapter we will consider some of the evolutionary changes we've seen in impacts and the drivers behind them.

The key lesson of this chapter is that the impact assessment is an essential piece of information that informs our objectives and shapes our practice. Tragically, the real cost of a catastrophe is often underestimated. The value of what is in harm's way has *evolved*, and while business continuity, emergency management, and counterterrorism may have different roles, professional practice in these fields should reflect this evolution.

Impact assessments are one of the most challenging tasks of intellectual analysis in our field. They ask professionals in business continuity, disaster recovery, emergency management, and counterterrorism to confront realities that are often beyond their control and scope of knowledge, including how an organization functions, what value it places on varied outputs it creates, and how those valuable outputs might be impacted by a disaster or terror attack. **Loss of value** is the comparative object at risk, or in harm's way. These impacts can affect finances, brand, and customer relationships. In emergency management and counterterrorism, an impact assessment measures impacts as serious as mortality rates, massive financial losses, and even the complete loss of governmental control.

Few professionals in these fields lose sleep over the risk assessments we conduct. Most practitioners have grown accustomed to considering the potential and possible risks that might manifest themselves should a disaster or terror attack occur. Most practitioners and professionals have come to understand there are risks that we can calculate based on probability and those that can only be understood in terms of their possibility. It is important to note that what might keep us up at night is *not* wondering if we are properly calculating the risks that constantly evolve in a difficult and ever-changing field. What might keep us up at night is *if we are calculating the impacts incorrectly*.

1.4 THE EVOLUTION OF IMPACTS

In order to better understand the modern impact assessment, we must consider the context in which many public and private enterprises now operate. This context is referred to as the **digital age** or the **information**



Figure 1.3 With advances in technology over the last century, our business models have changed as we shift from the industrial age to the digital age.

age, which is the notion that we now operate in a period in which the primary output of the enterprise or organization is information and services. This is a considerable change to the industrial and enterprise outputs of the **industrial age**, in which the primary item of output of the organization was a physical product (Figure 1.3).

The digital age includes the concepts of labor distribution, the globalization of the supply and distribution chains, a growth in emerging markets, outsourcing, and a variety of other permutations of new private and public policies purpose-built for these new realities. In addition, business, and perhaps life itself, seems to have accelerated with the arrival of the digital age, with real-time reportage, global communications networks, a deeper interdependency between trading and cash systems, and the overarching monetary policies and governance that guides them.

The terms **Fordism** and **Taylorism** refer to managerial and operational systems that had a high degree of local focus and brought raw materials through the front of a factory, with workers delivering finished products at the end of a manufacturing line. Fordism, named after Henry Ford, and Taylorism, named after Frederick W. Taylor (a scientist who focused on synthesized workflows), informed much of the thinking of the industrial age. In both models of factory management, worker output was designed and integrated in highly localized forms, managed by “the numbers,” and optimized for rapid manufacturing of products and their delivery through a factory.

Today, parts, materials, talent, information, and craftsmanship come to most organizations from all over the world with the “digital superhighway” of the Internet and private networks enabling the management of vast, globalized supply chains and the delivery of highly skilled knowledge work (such as product design, innovation, and management) to low-skilled workers, often to be made in countries other than the ultimate country of consumption. The life cycle of a product today can start as design and prototyping in the United States and be outsourced to any number of companies for refinement and sample creation, delivered in pieces to China or India for manufacture, and finally packaged and delivered to the end consumers back in the United States.

This complex system of management, design, and output is rapidly becoming the norm in U.S. organizations—and not only in business. Much of the public sector now relies on foreign computer chips, internationally networked systems, and even celestial information from satellites to operate and deliver public safety and counterterrorism capabilities. This highlights the primary condition of the economy of the digital age, which is that every piece of the factory is now a globalized point of service rather than a localized process. The digital age is often described as exhibiting a cultural condition known as **post-modernism**. To be postmodern is to be less tethered to location and more attached to time, context, and conditions that are fluid. One way to understand this shift is to consider a recent television commercial featuring a lemonade stand and the evolution of impacts that occurs as this small business grows.

1.4.1 Susie’s Lemonade Stand

Do you recall Verizon’s television commercials about Susie and her “lemonade empire”? The commercials were created by McCann Erickson for Verizon and went **viral** (spreading rapidly across many different media platforms) in 2011. In fact, they became so popular that the only known bottle of Susie’s Lemonade was auctioned on eBay in June 2009 for \$162.50⁴ in support of Alex’s Lemonade Stand Foundation (all proceeds go to find a cure for children with cancer), and you could also find a Facebook page for Susie’s Lemonade. McCann Erickson knocked the marketing ball right out of the park with its campaign for Verizon by adding something to a technology advertisement that just couldn’t be beat—a kid with a dream.

The commercials in this campaign worked on so many levels that there were over half a million write-ups and blog posts on the topic online,

and the print ad earned accolades from Adweek, calling the campaign “exceptional.”⁵ The commercial unleashed an arsenal of “cuteness” and cut to the core of the American dream, and it all started with the iconic lemonade stand.

Originally airing in March 2011, the first commercial was a study in postmodern business growth. In just under a total of 60 seconds (two 30-second commercials) we watched Susie’s business explode into a complex network of machines and human interactions. Going beyond Verizon’s marketing, the cute kids, and the “feel good,” small-town appeal of the commercial, we found a business case for mobile business encapsulated within a wonderful business model. The first commercial was a 30-second microcosm of any executive’s dreams of business expansion in the digital age.

1.4.1.1 The First 30 Seconds

Within 5 seconds Susie went from a bored little girl sitting at a quiet lemonade stand to a girl with a dream. Her dad handed her a cell phone and said, “Hey, Susie, why don’t you use this—it has a calculator.” The ad was a commercial ploy on how adults and kids see technology completely differently, and Susie delivered on her vision of just what the digital age had in store for her. Within 2 seconds, Susie was holding up the phone with a Global Positioning System (GPS) map of the neighborhood and delegating the expansion of her lemonade stands to groups of her friends. Within the first 10 seconds Susie’s Lemonade Stand had gone from a stand-alone business to a technology-driven, multilocation retail organization with three locations and five or six employees; all of the workers in her organization depended on GPS to track their growth. By the 11th second, they were all using a credit card reader attached to their phones to accept electronic payments through electronic funds transfers (EFTs).

At one stand, the customer lines grew long. By the 13th second, Susie was using a tablet computer to present her future growth plans to a set of investors. Sales were charting up, “and that’s just the first quarter,” she said confidently. Apparently Susie got her seed capital, because at 17 seconds she was video chatting on a wireless notebook with an architect who asked, “So you want a slide in your office?” Susie replied confidently, “Or monkey bars— either one.” Soon, Susie was buying a building and supporting a notebook-driven, wireless enterprise.

At the 21-second mark, Susie was marching through a warehouse, complete with forklifts and storage racks, conducting supply train

tracking of her inventory on a tablet. At 23 seconds, one of Susie's friends from the beginning of the commercial was sporting a shirt and tie, a tablet, and a Bluetooth® earpiece. Susie's dad came home and asked, "Where's Susie?" The boy cocked an eyebrow and asked, "Is she expecting you?" From the 25-second mark to the end, we see Susie, replete in her new business attire, standing in front of her house-turned-offices, with her lemonade delivery truck backing in. Looking at the camera, arms crossed with cell phone in hand, she was confidently staking her ground in the information age.

Within Susie's world a stand-alone business (the lemonade stand) acquired the following objects and systems in a mere 30 seconds: the phone, a GPS, credit card readers and EFT systems, tablet computers, Wi-Fi, and presentation software, an office, a notebook infrastructure, and video chatting, a warehouse, a supply chain management system, and a scheduling or calendaring system with unified communications capabilities. Finally, Susie's empire is in its first stage of growth with an office in place and delivery trucks doing their work. Of course this is only a commercial, but it did something very well—it tracked the postmodern growth of Susie's business in microcosm. Considering this, what happened in the next 30 seconds is not at all surprising.

1.4.1.2 The Second 30 Seconds

In the first 5 seconds of the second commercial, Susie had a crisis; one of her vending machines was nearly out of lemonade! "There's only one bottle left!" observed one of her diligent young employees. "I've gotta tell Susie!" and he's off on his bike to warn her about a failure in the distribution system. Back in her office, Susie was tracking her inventory on her tablet computer (with her slide and monkey bars in full view); she was already aware of the shortage and had a warning on her screen. "The vending machine on Elm is almost empty," she told an adult employee. "I'm on it, boss," he replied, as kids bounced on a trampoline in the background. As an aside, when the adult moved away from Susie's executive desk he noticed something, "New pony?" he asks Susie. Clearly, business was booming.

Meanwhile, Susie's (apparently loyal) young employee rode his bike as fast as he could through town to warn Susie of the shortage. Riding through a freshly laid sidewalk, he shouted, "Sorry!" to the construction workers, single-minded as he was on a mission. Meanwhile, having already addressed the problem, Susie moved on to her next appointment, announcing, "We are open for business!" as she cut the ribbon on her first retail store. Unknowingly, her loyal employee pressed on,

dodging through trees in a park to desperately get to Susie before the lemonade vending machine on Elm Street completely failed and was out of lemonade. Susie was still on the move, rerouting one of her trucks by asking a young employee in the warehouse to do a bit of work on the supply chain system on his notebook, "Let's reroute Greg from Fresno," she suggested.

Twenty-one seconds into the commercial, Greg, an adult in a "Susie" uniform, was walking toward his next delivery with a Susie truck in the background when his phone beeped and he got a message. He did a quick, albeit disgruntled, U-turn to handle the inventory problem back at the vending machine. At 23 seconds, Susie's loyal employee arrived at the warehouse on his dirty bike, disheveled and worn. "Susie! The vending machine..." Susie cut him off, "Already filled," she said, verifying it on her tablet.

From this simple act on Susie's part we can deduce that she has added a USA Technologies **telemetry** system (telemetry involves tracking merchandise and locating the nearest pickup and drop-off points for any given truck or delivery mechanism in the supply chain) and ePort cashless payment system (an electronic wireless cash card system) to her ever-growing business.

"Cool bike," she told the exhausted boy in her warehouse as she left for her next conquest. The boy looked after her in stunned amazement, as if to say, "How does she do it?" The final shot in this 30-second spot showed Susie without any gadgets at all—she's simply smiling and standing in front of her "Susie's Lemonade" building complete with loading bays and trucks being filled.

Within the second 30-second commercial, we find a Susie transformed. Her supply chain and payment systems have become fully integrated, she has unified communications, and she is using advanced telemetry and cashless payment systems. She has her office, adult employees, a warehouse, and a fleet of trucks. All within 30 seconds. These two commercials, when viewed back-to-back, show an encapsulated view of a rapidly growing business. Even if the reader extrapolates Susie's business growth over 60 days, 120 days, or even a year—we can see how rapidly a thriving business can evolve in the digital age.

Regardless of the length of time for a business to grow, this wonderful commercial is a case study in postmodern business growth. It shows how a product (even one as simple as lemonade) can expand into a thriving enterprise and, as that happens, what changes occur in the technology landscape and Susie's relationships. Notice how her

shareholders change from those few friends who helped her start her business to the investors and the technology partners she now has to satisfy. Notice how her supply chain grows from three lemonade stands to vending machines and retail stores supported by a warehouse and a fleet of trucks. Notice how her cash handling needs evolve from simple cash payments to EFT.

If an impact analysis were conducted in the first 5 seconds of Susie's enterprise, we would focus on the core of her business—lemons, sugar, water, her friends, and the stand. Within the first 30 seconds, that focus would expand to include multiple suppliers, a distribution channel, a fairly complex IT infrastructure, telemetry, and electronic funds transfers. It is important to note that we are not even mentioning her upstream and downstream partners and investors. If we were to revisit Susie in the next 30-second period, we would have to consider her retail operations, a now massive distribution system, just-in-time delivery, her scheduling system, her unified communications system, and perhaps a globalized system of suppliers.

In fact, Susie's rate of change can be plotted as a series of growth decisions along her business expansion that occur (in the commercials) at the rate of roughly one major change every 5 seconds. How many such changes happen in the businesses and organizations where professionals in the field are conducting impact assessments, and at what rate are those changes occurring? Most businesses have no idea. They have multiple growth-oriented projects that come to life and deliver value at different times. This is the most important lesson embedded in the microcosm so wonderfully envisioned by Verizon's commercial—*change enables growth*.

The commercials hold a potent message for the practitioners of business continuity, disaster recovery, and emergency management as well: Growth adds objects and value that can only be captured as a snapshot in time. The postmodern business environment requires change, and with change comes a new dynamic in the impact analysis. If the change rate outpaces our impact analysis (and it always does) the work product of our analysis is only as good for as long as it takes the enterprise to grow. This may be in seconds or it may be in months, but one way or the other, *the enterprise will change*. At its best, an impact analysis can only serve as a snapshot in time unless it is constantly updated and kept relevant. Frankly, very few businesses maintain a real-time view of potential impacts, and in the real world, even the best analysts in our field would have a hard time keeping up with Susie!

* * *

Just to be clear, the evolution of impacts demonstrated by Susie's Lemonade Stand could be replaced with the real-world impact of another kind of organization, say, the manufacturer of a life-saving vaccine!

* * *

While Orange County has never suffered from impacts resulting from a lemonade stand disaster, imagine the impacts to America if all of the same technologies used to formulate, package, and deliver the lemonade were instead being used to formulate, package, and deliver a vaccine during a health crisis. Even businesses such as private surveillance organizations, pharmaceutical companies, medical supply organizations, and emergency support provisions providers fit within the evolution of impact model demonstrated by Susie's Lemonade Stand.

1.4.2 A Fundamental Flaw

A flaw results in a damaged product. There are basically two types of flaws:

1. Design flaws
2. Process flaws

With respect to their individual impacts, design flaws trump process flaws by a wide margin; e.g., designing a plane with a fundamental safety flaw is much more serious than having a manufacturing process flaw in the building of the designed plane. There is a fundamental design flaw in the deliverable or work product called the impact assessment currently created in our field.

A **fundamental flaw** in much of what passes for an impact analysis is the tendency to think small, which is contrary to the evolution of impacts based on the booming digital age and postmodernism.

A set of problems and misgivings are embedded in this fundamental flaw:

1. A failure to understand the breadth of suppliers, distributors, and upstream and downstream dependencies that the organization values
2. A failure to align with internal organizational values and external laws and regulations as appropriate to the organization's industry and location

3. A lack of usage of a larger order and taxonomy of impacts, as well as their deviations on the part of practitioners

Using Susie's business as an example, we can illustrate these as real problems and better understand the fundamental flaw this textbook will be addressing.

1.4.2.1 Failure to Understand Breadth

First, to consider the breadth of Susie's organization and the impacts she might encounter if faced with a catastrophic disaster, we have to understand that her organization has radically evolved from a single lemonade stand to an empire with multiple stakeholders, vendors, and upstream and downstream systems that have enabled her growth. The scope and breadth of impacts to her business could include the lemonade stand, as well as her friends, her network and computing partners, her community, and her stakeholders. In Susie's example, the business moved from one with a very shallow impact capacity to one with a deep impact capacity in mere seconds.

1.4.2.2 Failure to Align with Internal Organizational Values and External Laws and Regulations

Second, as the lemonade stand business grew, new internal values and external laws and regulations would rapidly come into play. A stand-alone lemonade stand is rarely regulated by anyone other than "Mom." However, in our example above, the Securities and Exchange Commission (SEC) would be involved with Susie's finances. The FDA would be involved with her now mainstream product. Mom and Dad are now replaced with investors and perhaps, unionized employees. Susie's regulatory landscape has shifted with growth driven by information.

1.4.2.3 A Lack of Larger Order and Taxonomy of Impacts as Well as Their Deviations

Finally, the third problem is exhibited in Susie's business by the admixture of knowable, common objects, such as the early stakeholder boy who would ride his bike to Susie to communicate change and her automated response system that tracked inventory and found the nearest truck to replenish it. Here we are confronted with the standard "loyal employee" and the not-so-standard complex of digital and information-driven systems that may or may not be within Susie's control. As these complexities arise in her business, some coexist with one other, some seem redundant,

and to be clear, all of them lack a common taxonomy or language by which we might categorize and enumerate them.

Even as we approach the challenges of conducting meaningful impact assessments with an understanding that most impact analyses are too limited in their scope, if the impact assessment does not address the fundamental issues of the breadth of impact, alignment with values and laws, and a lack of a common taxonomy of impacts, there looms an even larger problem.

1.4.3 A Larger Problem

The fundamental flaw of impact assessments today is manifested in a set of larger symptoms that often accompany radical changes in markets and capital and cost models associated with the work of understanding impacts. With the digital age and globalization have come a host of new challenges and questions. Among them are questions of government policy, corporate stewardship, community, and global citizenry. While often viewed as lofty academic issues, these symptoms of change and change resistance have very real impact assessment influences outside of the sphere of academia.

Most of the transitional periods between ages, such as that from the agrarian age to the industrial age, are accompanied by *revolution*. We had the industrial revolution and we are in the midst of the digital revolution. The larger challenge we face as practitioners conducting impact analyses is that revolutions add turmoil on top of the already ground-shifting changes to the organizations and enterprises we serve. Historically, revolutions embody public, private, and political upheaval as the means of production and the distribution of labor and wealth occur. The digital age is not unique in this manner.

We live in an age of economic, military, and political change. Much of this change is driven by information and a widening global gap in equality as perceived by cultures as a result of these changes. While not all revolutions are in response to changes in monetary policy, political governance, and changes to the relationship between workers and production systems, many are. In 2010 and 2011 alone, the number and scope of revolutions occurring worldwide is dramatic.

As of this writing, there are several revolutions in their early stages, including:

- The Egyptian revolution