E-BUSINESS DESIGN
A Shift to Adaptability

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Abstract: This paper distinguishes the three fundamental business design patterns: control, cooperation and autonomy. Today, most e-Business designs are not balanced, because they over-prioritize control. Balance is achieved when one basic pattern is the top priority, while the other two patterns are not ignored. The paper explains how to use these patterns to create one of three balanced e-Business designs: e-Commerce, e-Broker and e-Barter. Market forces are now taking place to incentivize companies to become more adaptable. This can take one of two forms: a) a better balanced e-Commerce design, or b) a shift from e-Commerce to e-Broker. This paper presents more adaptable design architectures for e-Commerce and e-Broker. It concludes by giving several reasons why a balanced e-Barter design cannot be reliably conjectured at this time.

1 INTRODUCTION
The economy could very well turn out to be the driver of e-Business innovation and transformation for the remainder of this century. To explain:

1.1 Economic Downturn
The economy and stock market have been in lock step for over 100 years (Dent, 2004). There is data to now confirm that the economy is driven by births, plus immigration, plus a contraception-driven birth rate decline (Arnold, 2008). The capital goods part of the U.S. economy surged 1975-1985 due to the family formation of the U.S. baby boomers (25-year lag). The U.S. economy surged 2000-2007 due to the peak spending of the U.S. baby boomers (50-year lag). Figure 1 shows peak spending (Dent, 2009).

The U.S. economy went through a depression in the 1930s and a serious recession in the 1970s. Both of these events can be traced to the drop in peak spending of the 45-55 year olds at these times. The 1970s recession was mitigated by the family formation of the U.S. baby boomers. There is no such mitigation for the up-coming peak spending decline expected to begin in roughly 2010. Note: the current economic decline was due to mortgage derivates that failed when people over-extended themselves on consumption. The possible peak spending decline of still solvent people might add to the current economic downturn (Schiff, 2007).

1.2 Evaporating Mass Market
As a result of both the downturn and a business design that favours mass markets, companies must now shed employees at alarming rates (Anonymous, 2009). Job losses are occurring across industries and across geography. The unprecedented job loss rate is continuing with no turning point in sight (Karina, 2009). In discussions with executives from firms and universities over the past year, these parties reported...
that companies are simply cutting their costs to maintain lower levels of operation until a recovery occurs. Given continued severe job losses, and a possible large future economic drop due to peak spending decline, is this a sound business strategy?

1.3 More Niche Marketing

Before the current economic downturn, the so-called “mass market” was well understood and exploited. Access to this market was done with traditional “push” media such as TV, print, and Internet banners and pop-ups. Once the Internet emerged, the population outside the mass market could be profitably accessed with online store portals such as Rhapsody.com (Anderson, 2006).

Now that the mass market has seen a relatively severe decline, those companies that have relied on it are reacting to the economic downturn in two ways. First, they decrease investment in traditional push marketing (Anonymous, 2009) and brand reinforcement campaigns (Anonymous, 2009). Second, they simultaneously invest in different kinds of niche marketing techniques: direct marketing, database searches, Web searches, email campaigns, online communities, classified ads (Miller, 2008).

1.4 Adaptive Business is Sought

Discussions with executives prompted an informal study of my clients and colleagues on their perceptions of the current economic situation, and what they felt their companies or institutions should do. In January, 48 firms were surveyed. The 29 that responded represented each major industry, as defined by Yahoo! (2009). They spanned all major kinds of e-Business technology. Most described their current business situation as a combination of decreasing: customers, business wins and revenues.

Respondents indicated that they felt that the downturn, and its various aspects, was the major force behind their current business situation. Anecdotally, respondents said that business should immediately change its design to counter the force. They suggested two basic solutions. The first was a highly adaptive front-end, spanning the marketing, sales transactions, product and price. The second was highly flexible back-end operations that were standardized, integrated and flexible, with an ability to support executives in fast decision-making.

2 DESIGN FRAMEWORK

So the question is how can e-Business shift from its current design – one not able to cope with severe economic downturn – to an e-Business that can survive major market changes? One solution path begins by looking at business design from the perspective given by Robert Keidel (1995). Using this framework (see Fig. 2), one can determine the underlying bias of an e-Business design. And thus, by shifting this bias, a different e-Business design becomes possible. The remainder of this paper describes design bias, balanced business designs and bias shifts, and it gives examples of e-Business adaptability that can result from the intended application of the framework and its elements.

2.1 Atomic Business Relationships

The Keidel framework starts with atomic business design patterns. Each pattern represents one kind of fundamental relationship among people as they work. One such pattern is “control,” typified by a subordinate relationship, where work is managed and communication often comes in the form of dictates from management. Buzzwords such as downsizing, rightsizing, restructuring and reengineering come from this fundamental pattern.

A second fundamental pattern is “cooperation,” typified by people working together through integrated work relationships, and communication often occurring in a viral fashion. Buzzwords such as quality, involvement, teamwork, and multi-skilling come from this fundamental pattern.
The last fundamental pattern is “autonomy.” People working apart, separate relationships, and one-to-one dialog exemplify this pattern. Buzzwords such as diversity, empowerment, entrepreneurial and decentralization typify this fundamental pattern.

Business design is a trade-off among all three patterns. It is important to note here that not addressing all three human relationship patterns will cause a business to fail or severely under-perform. Keidel calls these situations “unbalanced designs.” The next two sections will touch briefly on what unbalanced and balanced business designs look like.

2.2 Unbalanced Designs

One way to create an unbalanced design is to over-prioritize a fundamental pattern. For example, over-doing “control” can create a business that cuts cost at the sacrifice of flexibility, quality, learning, etc. (e.g. the 1970’s U.S. Postal Service). Another over-prioritization is over-doing “cooperation.” This can create a business having little or no structure and operating primarily by consensus decision-making. Example: People’s Express Airline. A third kind of over-prioritization is over-doing “autonomy.” This can create a business with excessive diversification (e.g. conglomerates) or unsustainable product lines (e.g. IBM copiers were sold to Kodak) (Reis, 1994).

Under-prioritization is just as serious. One such under-prioritization is under-doing “control,” which can lead to no organizational hierarchy. Excessive deregulation is example. Another kind of under-prioritization is under-doing “cooperation,” which can lead to no innovation, projects or teamwork. The opportunity for bottom-up improvement (e.g. eliminating waste) in such a firm is nil. A third kind of under-prioritization is under-doing “autonomy,” which can lead to not valuing the contributions of individuals. Efficiencies due to innovations are rare in such a company. The last kind of unbalanced business design is setting no priority whatsoever. Examples are: no vision or mission, slogan-driven workplaces, and highly matrixed organizations.

2.3 Balanced Designs

A balanced business design occurs when a company selects one fundamental pattern as a top priority while also selecting the other two fundamental patterns as second priorities. In the case of “control bias,” companies such as franchises, or those organized around verticals or functions, typify this kind of balanced design. Industries such as manufacturing (e.g. HP), process engineering (e.g. Johnson Controls) and auditing (e.g. KPMG) have a control bias design.

Another kind of balanced business design occurs when a company chooses a “cooperation bias.” Companies that are based on teams, process or projects typify this kind of balanced design. Industries such as applied R&D (e.g. automobile parts manufacturers), marketing (e.g. the so-called “Marcom” firms) and human resources (e.g. staffing firms) have a cooperation bias design.

Another kind of balanced business design occurs when a company chooses an “autonomy bias.” Companies that are based on products or holdings typify this kind of balanced design. Industries such as basic R&D (e.g. pharmaceuticals), sales (e.g. Proctor & Gamble) and commodities (e.g. agribusiness) have an autonomy bias design.

3 BUSINESS DESIGN

Socio-technical research since the 1980s have all pointed to a key fact: technology always inherits the culture of the people who made it (Marca, 1995). Therefore, the bias driving the design of a business will also drive the design of its e-Business. That is the reason why this paper discusses business design before discussing e-Business design.

<table>
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<tr>
<th>Aspect</th>
<th>Control</th>
<th>Cooperation</th>
<th>Autonomy</th>
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<td>Constituency……</td>
<td>Shareholders</td>
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<td>Organization….</td>
<td>Directives</td>
<td>Teamwork</td>
<td>Partnership</td>
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<td>Competition…..</td>
<td>Cost</td>
<td>Flexibility</td>
<td>Differentiation</td>
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<td>Reporting……….</td>
<td>Steep</td>
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<td>Rewards……….</td>
<td>Hierarchic</td>
<td>Mutual</td>
<td>Individuals</td>
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<td>Managed</td>
<td>Teams</td>
<td>Forums</td>
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<td>Decisions……….</td>
<td>Mandated</td>
<td>Shared</td>
<td>Delegated</td>
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Figure 3: Business Profiles of Balanced Designs. (Each column represents a business profile)

3.1 Business Profiles

Brick-and-mortar and e-Business are alike in that having a particular bias means having a particular business profile. For example, “control bias” firms are beholden to shareholders, they often operate by directives, and compete on cost (Fig. 3). Such firms often have steep hierarchies, standardized operations and sequential data flows. Their reward systems are often hierarchic, meetings are tightly managed, and decisions are often mandated. Example: IBM.
When companies have a “cooperation bias,” they are beholden to their employees, they often exhibit constant teamwork, and they compete on flexibility. Such firms often have flat hierarchies, spontaneous operations and reciprocal data flows. Their reward systems are often mutual, meetings are team-centric, and decisions are shared. Example: Schlumberger.

When companies have an “autonomy bias,” they are beholden to their customers, they often exhibit partnership with their customers, and they compete on differentiation. Such firms have flat hierarchies, independent operations and pooled data flows. Their reward systems tend to focus on individuals, meetings often occur in forums, and decisions are often delegated. Example: Proctor & Gamble.

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<th>Control</th>
<th>Cooperation</th>
<th>Autonomy</th>
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<td>Services Configured Agent</td>
<td>Commodity Custom Exchange</td>
</tr>
<tr>
<td>Information Infrastructure Integration</td>
<td>Workflow Client-Server Constrained</td>
<td>Network Grid Standard</td>
<td>Recommend Cloud None</td>
</tr>
</tbody>
</table>

Figure 4: e-Business Profiles of Balanced Designs. (Each column represents a business profile)

### 3.2 e-Business Profiles

e-Business firms having “control bias” (Fig. 4) tend to focus on a mass market, and electronically connect via B2C and B2B atomic e-Business models (Weill, 2001). They offer products fixed in price and capability, and sell them through a “sell and buy” portal (e.g. Zappos.com). Often, transactions follow a workflow, the customer’s progress through which sometimes appears at the top of the screen (e.g. Amazon.com). They also cross-sell related products on their portal (e.g. Continental Airlines).

e-Business firms having “cooperation bias” (Fig. 4) tend to focus on niche markets, and electronically connect via C2C or C2B atomic e-Business models. They often offer configurable products or services with value-based pricing. Sales can be negotiated (e.g. Mortgage.com). If the global economy worsens, such negotiations could be carried out via intelligent electronic agents (Mok, 2005) (Neumann, 2007). Such e-Business firms have an ability to leverage social networks (e.g. Dooce.com) that create niche markets (Miller, 2008).

e-Business firms having “autonomy bias” (Fig. 4) often focus on individuals, electronically connecting via a C2C e-Business model. The closest examples we have today are electronic exchanges, where sales are often auction-like in nature (e.g. eBay.com). A recommender system (e.g. like on eBay.com) can be embedded in the exchange (Resnick, 1997) to give individuals a sense of how much to trust seller and buyer (Nojouman, 2006). The exchange also has an e-Money (Forrest, 2005) mechanism (e.g. PayPal). Section 4.3 will discuss why exchanges do not fully implement an “autonomy bias” e-Business.

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<th>Aspect</th>
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<th>Cooperation</th>
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<td>Spending After 2010? Macro/Micro</td>
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<td>Scope………</td>
<td>Majority………</td>
<td>Mass Market Nice to Have</td>
<td>Group/Swarm Need to Have Agent-Based</td>
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<td>Intent………</td>
<td>Intent………</td>
<td>Statistical</td>
<td>Individual Must Have Agent-Based</td>
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<td>Model………</td>
<td>Model………</td>
<td>Multi-Media</td>
<td>Computer SOA</td>
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<td>Platform………</td>
<td>Platform………</td>
<td>Agent</td>
<td>Exchange e-Money</td>
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<td>Enabler………</td>
<td>Connection………</td>
<td>Cloud</td>
<td>Phone</td>
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Figure 5: Some Possible e-Business Shifts. (A shift from “control” to “cooperation” is possible)

### 3.3 e-Business Shifts

The first major e-Business shift (Fig. 5) started in 1995, when the Internet was first able to operate on a very high speed global network. Also at that time, a world-wide, computer-literate global mass market was already in place (Marca, 2008). This enabled “control bias” companies to shift at least a portion of their brick-and-mortar operations to the Web. By 2000, personal computers had very fast multi-media display, and thus “push” advertising (e.g. pop-ups designed from the TV ad metaphor) accelerated (Marca, 2006). Consumption followed the peak spending of the 45-55 year old population.

The second major e-Business shift, discussed earlier in this paper, may emerge after 2010. Should a peak spending drop happen, this could cause far greater economic downturn. Should that occur, firms that have not shifted their e-Business investment to selling highly configurable products with adjustable pricing may not survive. Exploiting the grouping and the swarming phenomenon of social networks (Hamill, 2009) with intelligent mobile agents (Arciero, 2009) may hold promise in that economic context. Also, a business shift, to more cooperative ways of operating, would be required. The so-called 4-Cs is that operational paradigm: a) customer needs instead of product, b) cost to the customer instead of price, c) relationship instead of promotion, and d) convenience instead of place (Krueger, 2003). Any
business that firmly holds onto its “control bias” design cannot operate this fashion.

A third significant e-Business shift may happen, but not until late in this century. This shift could be even more significant if it is due to the loss of oil (Kunstler, 2005). Should that occur, some kinds of transportation may disappear (e.g. overnight package delivery and individual daily commuting beyond a very small distance). Should such events unfold, a new, cottage-like industry and a new, sustenance-trading market might appear (Hart, 1997). In this context, the likely trading computer might be a cell phone. But before this could happen, issues will need to be solved. Social, financial and technical issues such as: reliable e-money (Byler, 2004), verifying trust (Mariusz, 2007) and fair trading (Gonzalez, 2005); see Section 4.3 for details.

4 e-BUSINESS DESIGN

Using the e-Business profiles and shifts suggested by the Keidel framework, three kinds of adaptable e-Business designs can be identified. To explain:

4.1 Adaptive e-Commerce

The simplest form of an e-Business design is the selling and buying of products through a Web portal. If this is all that a company offers, Keidel would call this design “over-doing its top priority” by excluding cooperative and autonomous mechanisms that could balance the design. Balancing to achieve a “control bias” yields a more Adaptive e-Commerce (Fig. 6). This could be realized with a C2C buyer community forum (Carpenter, 1999), like iVillage (Chua, 2007), and a B2C personalized buying area (Jirgen, 2000).

To explain, a company can create a C2C online forum for customer loyalty (Amofah, 2005) and subsequent viral marketing (Huffman, 2009). Failure to do so could lead to serious trouble should a strong enough social network conversation occur to call out (rightly or wrongly) shortcomings with a product or its company, such as in the case of the Kryptonite lock blog swarm (Torrone, 2004).

Regarding personalized buying, Adaptive e-Commerce could allow users to create a “MyX.com” space within the portal (Instone, 2000), which can be tailored somewhat by the buyer – specific products, native language, buying preferences (Vassiliou, 2002) – to enhance or speed up purchases, like using virtual reality to get a sense of product appearance and/or performance (Chittaro, 2000).

Adaptability can be further enhanced by building ubiquitous operations (Huffman, 2009): integrating the sales channel into both the B2C portal and the C2B portal (Seybold, 1998). Here, sales partners spontaneously work with buyers to get the right product and, in some cases, to provide some level of authorized consultation on product variation.

Servicing both customers and the sales channel requires “opening up” the Customer Relationship Management System, in a cooperative way, to all employees; creating a team-oriented knowledge pool that can address all questions about product and price, and their possible variations (Kotoro, 2002). In this balanced design, management becomes more involved with operations – understanding not only what products are being sold, but also what product variations are being requested by customers. Such changes create a more balanced e-Business design, one that prioritizes “control,” but without sacrificing “cooperation” or “autonomy.”

Figure 6: An Adaptive e-Commerce Design. (Regular transactions plus personalized buying and customer forum. Open CRM supports customers and sales channel)

4.2 Adaptive e-Broker

Adaptive e-Broker, which has “cooperation bias” design, differs from Adaptive e-Commerce, which has “control bias” design (Fig. 7). e-Broker starts with one or more social networks, which can: a) be independent or interrelated, b) form a long-lasting group (e.g. Dooce.com), or c) build up fast then disappear (e.g. Kryptonite lock blog swarm).

Whether group or swarm, or long- or short-lived, once a social network binds its populace with an online conversation, a niche market forms (Kollock, 1999). And even though there are dynamic arrivals/departures of individuals to/from the niche market,
over time, a stable product or service offering can, in theory, be established (Semret, 2000).

The time to stable offering might shorten if the niche market were to be represented by an intelligent electronic broker agent. Such an agent has three major goals: a) Establish a coalition of trusted buyers having similar buying requirements (Gomes, 2007); b) Establish a relationship with one or more product providers that can satisfy coalition requirements (Hattori, 2007); c) Hold iterative price adjustment negotiations with product providers until an optimal deal is reached though some kind of bidding and deal clustering process (Jones, 2007).

The Adaptive e-Broker sales channel could, if properly connected, participate in negotiations. An important consideration here is the accurate and complete flow down of provisioning to the sales channel and/or supply chain (Marca, 2006) to limit product configurations and price adjustments.

Just as in Adaptive e-Commerce, Adaptive e-Broker requires an “opening up” of the Customer Relationship Management System, in a cooperative way, to all employees so they become a team-oriented knowledge pool that can address all questions about product and price, and their possible variations (Kotoro, 2002).

Just as in Adaptive e-Commerce business, the management team in an Adaptive e-Broker firm becomes more involved with its operations – understanding not only what products are being sold, but also what product and price variations and are being requested by customers.

First, will future economic or market forces cause people to barter 1-on-1 for sustenance-level goods or services? Note: e-Barter is not time banking where effort, measured by time, is traded. Such systems are cooperative-autonomy hybrids (Seyfang, 2002). We have not reached that time when oil will run out, and all its consequences (e.g. broken roads, few planes).

Second, will electricity be available? It is hard to know how the world will generate and use electricity late in this century. For example: A 10x10 mile solar panel could power the U.S.A. today (Anonymous, 2008), but what will business and government create to generate 23 terawatts of power daily to the world? And will people actually need that much, or will low power personal devices be the norm (Lemke, 2009)?

Third, will computers be needed? A 1-on-1 trade at a local level does not require an exchange or the Internet (Calvert, 2003). It only requires cell phones with an embedded computer. But it does require other, as yet unavailable, socio-technical elements.

Research in mobile computing and intelligent agents is exploring related issues: trading partner matching (Haddaway, 2004), verifying trust (Mariusz, 2007), fair trading (Carpenter, 1999), reciprocal exchange (Stodder, 2000), e-Money (Byler, 2004), repudiation (Onieva, 2008), loss of privacy (Krogt, 2007) and gossip (Meshulam, 2007) – just to name a few!

Fourth, can business adapt? How many of today’s firms that rely on mass or niche markets would have both political and financial incentive to shift to an “autonomy bias” design? Maybe new entrants emerge to offer an inexpensive, mobile, and adaptive e-Barter solution; just as Amazon and eBay emerged to dominate their respective solution spaces.

4.3 Adaptive e-Barter

A design for Adaptive e-Barter cannot be reliably conjectured at this time for several reasons (Fig. 8):

- Establish a coalition of trusted buyers having similar buying requirements (Gomes, 2007)
- Establish a relationship with one or more product providers that can satisfy coalition requirements (Hattori, 2007)
- Hold iterative price adjustment negotiations with product providers until an optimal deal is reached through some kind of bidding and deal clustering process (Jones, 2007)

![Figure 7: An Adaptive e-Broker Design. (Intelligent agent negotiates product/price for niche market)](image)

![Figure 8: Conceptualization of e-Barter Issues. (This is a graphic of the issues; it is not a proposed design)](image)
5 SUMMARY

Traditional electronic commerce was triggered by the combination of an emerging Internet, plus an existing, and very dominant, mass market. It operates on a technology infrastructure of pervasive personal computers that are: a) capable of displaying rich multi-media and b) connected by an extremely fast, global network. E-Commerce is also typified by "push" advertisements (e.g. pop-ups), "sell-buy" portals, and relatively fixed products and prices. In contrast, electronic brokering is triggered by the combination of emerging social networks, plus niche markets that quickly arise within those social networks. Up to now, the closest examples we have are electronic exchanges that provide auction-like transactions. However, this kind of e-Business operates independently from today's social networks.

Market forces have now taken place, and are expected to continue, that could encourage firms to shift from traditional electronic commerce design to a design that supports electronic brokering. The electronic brokering discussed in this paper is typified by a niche market (within a social network) identifying a common buying need and then having an intelligent agent represent that niche market in a product function/feature/price negotiation. This kind of e-Business may soon become a reality, especially if the decline in consumer spending that is currently evaporating mass markets is followed by large consumer spending decreases due to demographics. Should existing mass markets continue to shrink or disappear, companies may be highly incentivized to exploit niche markets within social networks.

In light of these possibilities, this paper suggests that companies evaluate their e-Business design, and apply the design framework of Robert Keidel. That framework can evaluate the design of any business (brick-and-mortar or electronic) along three dimensions: control, cooperation, and autonomy. Poor (i.e. unbalanced) designs result from severely over- or under-prioritizing one dimension. Good (i.e. balanced) designs result from prioritizing one dimension while not sacrificing the other two (i.e. biasing the design). Three general and balanced e-Business designs are possible: one with a control bias (i.e. e-Commerce), one with a cooperation bias (i.e. e-Broker), and one with an autonomy bias (i.e. e-Barter). Many of today's e-Commerce Web sites are unbalanced (i.e. transaction only); adding user-defined personalization, an online buyer community, and viral marketing, would bring balance.

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