

FROM BUSINESS GAMES TO SIMULATIONS – SIMUWORLDS & MICROWORLDS

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ABSTRACT

This paper will designate the difference between a business simulation--a fully case-based experience, with years of living history and a business game. Additionally it will demonstrate how simuworlds and microworlds result. The simulation described is based on a living case of Hewlett-Packard (HP) and Compaq Computer (CQ). Global Strategy Simulation (GSS) provides an introduction to a company and a history so realistic that managers in specialty areas can learn not only how to conduct global strategic planning, but also the peculiarities and history of the microcomputer industry, its competing firms, its suppliers and its R & D, manufacturing, and marketing to overseas employees or contract workers. GSS is designed primarily mature participants in industry or graduate schools. There are no chapters, only seminar sessions, and all wording is at the mid-management to executive level. All learning is experience--simulations provide living historically based complex and enriched experiential learning-- games provide more generic, but often complex experiential learning.

INTRODUCTION

The simulation described in this paper is based on a living case of Hewlett-Packard (HP) and Compaq Computer (CQ) (Hewlett/Packard, 2010). The *Global Strategy Simulation (GSS)* provides an introduction to a company and a history so realistic that managers in specialty areas can learn not only how to conduct global strategic planning, but also the peculiarities and history of the microcomputer industry, its competing firms, its suppliers and its R & D, manufacturing, and marketing to overseas employees or contract workers. GSS is designed primarily to provide strategic experiences for mature participants in industry or graduate schools. There are no chapters, only seminar sessions, and all wording is at the mid-management to ex-

ecutive level. All learning is experience--simulations provide living historically based complex and enriched experiential learning-- games provide more generic, but often complex experiential learning. The HP CEO at the start-up of GSS delegates the strategic operation of CQ to several deputies who carry out his agenda as best they can for five to eight years with commensurate strategic plans and goals for each.

The *Multinational Management Game (MMG)* has been organized and played similarly, but with no historically based case information for the simulated company and the simulated industry.

First a bit of history of ABSEL and simulation and games. *ABSEL, The Association for Business Simulation & Experiential Learning* was named by Ralph Day, Stan Vance & Bernie Keys, in Keys' office at Oklahoma Christian College at our first annual meeting in 1974. Ralph Day, author of one the first marketing "simulations, *Marketing in Action* (Day, 1962) actually provided quite a rich, case oriented experience, defining laundry detergents with three dimensions of product characteristics and about eight dimensions to each characteristic. He had more recently authored the *Sales Management Simulation* (Day 1968). Stan Vance had authored *Management Decision Simulation* (Vance, 1959), which had the realistic but troublesome evaluation characteristic of having competing teams begin from different financial, production, and marketing positions. Bernie Keys had taken a small uncopyrighted business game with generic products, an industrial good and a consumer good, and enriched it by defining the products as microcomputer products, adding R & D that affected both the production lines and the marketing characteristics and other additions to spawn *The Executive Simulation* (Keys & Leftwich (1973). These three authors, while naming ABSEL, never addressed explicitly the question of simulations versus games, though there was considerable discussion about whether to include experiential exercises in the title. Our decision to do so was no doubt influenced greatly

by Duane Hoover's paper defining experiential exercises and we traveled back and forth to the experiential room where Hoover was presenting, discussing our naming progress with him and others. "Experiential learning is conceptualized here as a methodology of education which has a learning impact on the whole person, including feeling (*affect*) and *behavior*, in addition to *cognitive* stimulation (Hoover, 1974).

Complexity is defined as the total number of numerical decisions and conceptual choices to made in a round of simulation play. **Enrichment** is defined as the degree to which real world characteristics are incorporated in a simulation based on real company history—case studies. Most modern simulations are both complex and enriched. Complexity can be increased without adding realism by, for example, adding more and more assembly lines, more ordering of supplies, additional production lines for the same product with no differences in materials used or manufacturing process, etc.. Enrichment can be enhanced by converting an R & D input that has been affecting only the product quality, to one that also enhances cost reduction. The combination also provides the verisimilitude of modern companies who design their products not just for show but for ease of and low cost production with interlocking teams from both sides of R & D. Wolfe, J & Keys, J.B. ((1997 p. 69) reviewed the complexity factor and its affect on learning in business games. The results were quite mixed. See also Keys J. B. & Wolfe J. (1990) for a more extensive discussion of the concepts of complexity and enrichment in simulations and games. There was definitely a bias among the three of us in favor of enrichment rather than more and more complexity, and for strategic experience as opposed to tactical experiences. Strategic and tactical experiences are defined as the length of a turn-a-round cycle in a simulation. Tactical experiences are built on a quarterly or shorter set of decisions. Strategic experiences are built on a year or more set of decisions, usually requiring extensive feedback and learning reflection every three to five years. Many of the early simulations and games required quarterly decision sets as opposed to yearly sets. *The Carnegie Tech Game* had been launched sometime before, but was so complex that it required a team of administrators and two semesters for graduate students to play it. It did not sell well.

Though not designated clearly by Keys and co-authors, the movement of the game which Bernie co-authored has been progressively toward simulations rather than games. *The Executive Simulation* (Keys & Leftwich, 1973) begat *The International Game* (Edge, Keys & Remus, 1976) which begat *The Multinational Management Game* (Keys, Edge & Wells & 1994).

Simuworlids are based on a computerized business game architecture such as *The Global Strategy Simulation* and include the ability to learn across functions, countries and cultures. Participants must plan across marketing, operations, and finance, and engage in strategies across world markets and diverse cultures. A major strength is their

ability to provide "big picture learning. **Microworlids** stem from assessment programs, such as Globalcorp and Foodcorp, are built on the in-basket architecture, and involve participants in a simulation utilizing free behavior. They have typically included two-level hierarchies and have been conducted with trained behavioralists as observers.

THE MULTINATIONAL MANAGEMENT GAME & THE GLOBAL STRATEGY SIMULATION – ILLUSTRATIONS

The designations called for by this paper, namely business simulations and business games, will be illustrated by two experiences—that of the *The Multinational Management Game (MMG)* (Keys & Wells, 1997) and the in-process: *Global Strategy Simulation (GSS)* (Keys & Keys, TBP 2011). MMG represented a game on the way to a full simulation, by the authors designation. It was a global experience, driven by a real industry and realistic products. It incorporates an industry history, but does not incorporate a realistic case history of the company and products incorporated. It is global, complex and strategic, based on yearly budgeted decision inputs and requiring the development of two to three strategic plans and incorporating up to more than 100 tactical decisions. It included an opportunity for players to learn some about the micro-computer industry and to make strategic decisions of either/or marketing, producing, and financing two overseas locations, Germany or Malaysia, with possible producing sites in Berlin or Kula Lumpur. If team players chose to go overseas with any function they were required to make transfer pricing decisions with realistic ratios changeable by the game administrator, along with other decisions start-ups. The transfer prices are based on those in Germany and Malaysia at the simulated time of game play.

In other words, MMG incorporated complexity, but not the enrichment that would lead to the degree of verisimilitude incorporated by GSS. We define these attributes of complexity and enrichment above but will clarify further. Complexity is defined typically in the Bernie Keys Library articles on number of tactical decisions and strategic decision, in games by the ABSEL community, by offering more complexity in the production function—such as more supplies, and more production lines—but sometimes including more complexity in the marketing function such as offering more channels of distribution or more types of advertising. Enrichment in similar articles is based on realistic case histories and shading of competitive variables—for example adding different product options, adding overseas marketing, production, and financing options. Note that the two concepts, complexity and enrichment can be, and are often blended, as in GSS's use of several channels of distribution—direct to larger retailers, internet sales reps, salespersons in the field. When these are blended they can be summarized as producing verisimilitude with real case history from actual industries and com-

panies that leads to and affect simulation start-up. See for example Keys (1970).

A bit of history may be of interest, in addition to the enrichment and realistic case approach. Some of the following ideas and concepts utilized in GSS are quoted from a dissertation written in 1970 (Keys), but seldom noted in our reviews of literature.

**THE GLOBAL STRATEGY SIMULATION:
A SIMUWORLD™ – A BRIEF**

1. A power-point presentation is given by the CEO of a parent company IM, corresponding to Hewlett-Packard’s CEO, to his deputies, VPs who are becoming the executives of a spin-off micro-computer company, corresponding to Compaq Computer, purchased by HP, but now guided by the HP board and operating on the stock market. This executive session is provided in traditional games by the game manual start-up rules. The presentation begins: “Gentlemen and Ladies, we have affected a merger with CM (counterpart of Compaq Computers)...This makes us a major player in the microcomputer industry. We want our Top Staff to stay in Pal Alto and operate the large scale business computer, server, printer and networking market. To do this we need to change your base to Seattle and accept the promotion to the top executive positions of a new microcomputer company... The roles are then defined and the agenda by CEO Stallings is presented: “Here is the immediate agenda for you.

- (1) Organize into a team with the roles which I have defined for you.
- (2) Do your homework and study all of our existing and potential plans in process.
- (3) Review yearly decisions with the heads of units and submit them on time.
- (4) Review company reports previously returned and published by our stockbroker.
- (5) Make tactical plans for each set of yearly decisions.

- (6) Complete a strategic plan for CM.
- (7) My assistant will contact you for an update and schedule of meeting for your strategic plan update every three years.
- (8) I have included forms and a brief DVD seminar reviewing the strategic planning process in Power-point form as a refresher for each of you.
- (9) Now, let me review with you a bit of the history of our parent company which after the merger we will now call ICM.

2. Step (9) above introduces a real case history with only some name changes. “One of the best innovations discovered for adding industry realism to games is the addition of the dynamic business game case...” (Keys, 1970, p. 5)

3. The steps above also presume a suspension of the “Mikado” approach--enrichment through suspension of tactical decisions and enhancement of strategic moves. Cohen & Miller (1964, pp. 159-161) say: “The real world, alas, is not like the Japan of Gilbert and Sullivan, where, when the Mikado says ‘Let a thing be done, ‘it’s as good as done.’” While these writers are dealing with raw materials ordering, in MMG and GSS we include the Mikado approach as defined by Cohen & Miller, by assuming that there is a Manufacturing Manager reporting to one of our VP’s who follows specified policies and procedures in building work stations and ordering appropriate raw materials (Cohen & Miller, pp. 166-167). This allows one of our team members to concentrate on the strategic plan for manufacturing, implemented by a yearly tactical production plan, driven in term by the sales forecast from the Marketing Vice-president’s assumed sales and marketing department. We thus, presume a Mikado team at the plant, sales and finance level below who will implement our strategic plans perfectly—even if they are wrong.

4. The development of standard operating procedures (SOP) and standard reports are necessary. Like most business games, GSS includes for tactical planning Standard Operating Procedures built on the Excel format. In this

**Characteristics Affective, Behavioral, and Cognitive Dimensions
in Learning of Games vs. Simulations
Exhibit 1**

	Architecture	History	Purpose	Organizational Learning Emphasis
Game	Computerized Management Game	Imagined	Tactical	Short Term and Horizontal
Simulation	Computerized Management Game plus Live Case-Simuworld™	Research-Based	Industry and Strategic Experience	Long Term Vertical and Horizontal

case it includes a sales forecast, connected to a production schedule, driving a Pro Forma statement, in turn concluding with a cash flow budget. This allows participants to begin with a SOP structure that will produce corresponding feedback and to participate in the simulation with rational tactical decisions from year one—even though they will not at that point have conceptualized the task perfectly.

SUMMARY OF OTHER GLOBAL STRATEGY SIMULATION CHARACTERISTICS

The *Global Strategy Simulation* will be fully web-based and accessible and easy to use from virtually anywhere in the world. The simulation provides opportunities for up to hundreds of tactical decisions and many strategic alternatives including global strategy choices. It includes:

- Movement to India or China, or both.
- Offshore R & D, manufacturing and marketing options with consideration to changing currency values, interest rates, wage rates, and many other variables managed by the game administrator.
- The game administrator maintains control of approximately 100 starting positions such as shipping charges; exchange rates, prime interest rates, and materials costs.

All of the dimensions of GSS have been explored in previous simulation play in earlier forms of the simulation.

PROVIDING “BIG PICTURE” LEARNING AND DEBRIEFING THE GLOBAL STRATEGY SIMULATION™

PRACTICE:

“Attorneys have ‘moot court,’ theater groups and symphony orchestras have rehearsals, and doctors have the practice cadaver. But where – or how – do managers rehearse?” (Keys, Fulmer, & Stumpf, 1998, p. 193). Unfortunately, say Fred Kofman and Peter Senge, managers ‘seldom practice; they only perform’ (Kofman, F & Senge, P. 1994, p. 20). These statements form the rationale for a simulation like GSS aimed at mature audiences. Simu-worlds provide a laboratory in which participants can overcome the blind spots that develop in the real world and examine implementation of planning across all functions of the simulated company. Further they encourage experimentation (there is no permanent danger from failure) and they see the interrelationships of cause and effect within a compressed time frame (Keys & Fulmer, 1998, p. 195).

OVERCOMING BARRIERS TO LEARNING:

Senge and Kofman (1993) have discussed four barriers to learning that can prevent a company (or team) from becoming a learning organization: (1) Individuals in each functional specialty see only one aspect of a larger problem, and this fragmentation prevents **learning horizontally** across the organization (i.e., from sales, to production to pro formas to budgeting).. (2) Top management planners fail to perceive the interaction required with lower management levels, and lower management levels fail to conceptualize plans beyond their own functional area. This fragments **vertical learning**. (3) Strategic planning is frequently truncated by a failure to integrate **learning for leadership** with **strategic planning**. And (4) executives often fail to grasp the connections between **short-term actions** and **long-term results**. This fragmentation obscures an understanding of **cause and effect**.

OVERCOMING HORIZONTAL FRAGMENTATION WITH THE GLOBAL STRATEGY SIMULATION

In GSS participants assume the roles of CEO and senior vice presidents of marketing, operations, finance, and international. They study the actual history of an industry and a company to engage in top management control of a billion dollar company. They are often given a lackluster company with many strategic and tactical problems. Yet, in most cases they are allowed to ride a growth wave to global operations and a multi-billion company, exactly like Compaq Computer has done. During the simulated start-up years, participants clarify team roles, develop a viable organization, and learn to use the information processing system built on an Excel program. After they have stabilized domestic operations they may introduce a new upscale product (a laptop), then progress to exporting, manufacturing offshore, financing in other countries, and ultimately develop an integrated mix of global operations. After 2-3 years of corporate oversight by the parent company (simulation administrator), teams must develop a five-year plan for the future. A major debriefing follows participant’s presentations of each five year plan implementation. Functional specialists develop broad learning horizons, participants develop skill in environmental analysis and strategic planning across functions, and they gain a broad picture, as if viewed through a wide-angle camera lens—a broad picture of the patterns of horizontal planning—initiated by sales and marketing and followed by responses from operations and finance. Incorporating a compressed time frame assists in clarifying relationships well. The combination of corporate-level strategy design and cross-functional strategy implementation promotes “big picture” learning.

OVERCOMING VERTICAL FRAGMENTATION WITH GSS:

To truly treat the vertical fragmentation problem imaginative structural elements are needed. A two-level hierarchy must be created with a CEO and perhaps an Executive VP actually housed in another room or building—a headquarters team, usually assigned to oversee financial strategy for operations and marketing. Headquarters is often asked to present a plan for launching a new product or for going overseas. Participants are asked to analyze their simulated company with the help of spreadsheets, develop brief business plans and make tactical decisions to implement the plans. To promote reflective learning, managers in industry are encouraged to “**step outside the moment**” to observe how they are working together and what progress is being made. To view more of two level hierarchy development see the development of a two course simulation in which freshman making tactical decisions report one day a week to seniors developing their strategic plans. Each group evaluated one another’s leadership and communication skills. The “step outside the moment” process was encouraged in the university setting by the use of “learning diaries—about the only looking glass available for teams in a simulation. Once administrators walk into the presence of a team all planning and communications stops. DVD’s would similarly stifle natural planning and decision making. For more review of two-level hierarchies review the customized simulations developed by the Center for Managerial learning and Business Simulation at Georgia Southern University—RAMPLAND for the Atlanta regional Rehabilitation Office, SCAMP for the National Park service (Keys & Fulmer, 1998, p. 202) and an article published in The Bernie Keys library (Keys, 1974).

ALIGNING LEADERSHIP DEVELOPMENT WITH STRATEGIC PLANNING:

This learning attribute of **aligning leadership development with strategic planning** can be promoted through learning diaries, participant observations and debriefings. Players explore issues of management style, decision-making techniques, and interpersonal dynamics (Keys 1974). The Center of Creative Leadership has emphasized this element almost exclusively in their one week training program, built on non-computerized simulations, but is adding a computerized simulation to strengthen the strategic planning focus.

CONNECTING LONG-TERM AND SHORT-TERM VIEWS:

Policies, decisions, and strategies in complex organizations are often based on short term thinking. Years ago Keys conducted a program for a group of middle level managers (most young MBAs) at IBM in Poughkeepsie,

New York. He introduced the simulation in Poughkeepsie, received decisions and sent reports by Fax and returned for a debriefing. He was surprised to find that the winning team, profit-wise, was selling their Product B at less than costs. This could have been a market share, excess production line strategy, but the debriefing led him to believe that they had just not looked at the long term effects of their decisions. For a keener look at this factor see the short discussion of the Hanover Insurance Company microworld (Keys, Fulmer, & Stumpf, 1998, p. 203.) The conclusion? “The lessons learned at Hanover is a simple vital one for organizational learning—**management must view short-term activities and problems as interrelated**, but inconclusive, pieces in the long-run development of the company.”

The **short-term/long-term fragmentation problem** was addressed through systems theory in such books as *The Fifth Discipline* (Senge, 1990).

LEARNING FROM SEAMLESS INTEGRATION OF THE SIMULATED AND REAL ORGANIZATIONS:

Organizational learning must blend the mental models of individual managers with the models that are shared among learners—the team. Consultants anticipating such needs modified a predecessor of MMG to become the shadow of a large chemical company. But participants complained that all team members need to learn how to plan in all functional areas simultaneously in order to be effective as a team. Consequently learning labs were developed with audiotaped workbooks (today we would use videos). Afterwards, during the first decision round, one team member would attend the lab and study operations while another focused on marketing or finance. On the second round, team members switched functions for study. Soon all members were cross-trained in the various functions. Over the years, players have provided information about discrepancies between the real company and the simulation to industrial engineers who program the simulation. “Many of these gave rise to cross-functional questions never addressed by the company previously. During simulation rounds, engineers and operations managers, traditionally concerned only with chemical tank purchases, now project how depreciation and write-offs affect cash flow. Marketing personnel, for the first time, see the connection between production capacity utilization, unit costs, and pricing strategies. By means of the simulation managers are free to share learning naturally. What began as a game has become a simulation mimicking the real organization with great verisimilitude. The organization has developed a new motivation and commitment to learning experimentation. ‘Big picture learning’ has become a way of life. The **practice field** has become **seamless** with the real organization.” (Keys, Fulmer & Stumpf, 1998, pp. 209-210).

THE FINAL DEBRIEFING:

How does one measure success in GSS? In most programs teams will have made three strategic plans. The final plan is submitted in written form and is presented using powerpoint and other visuals. In MBA and Executive MBA classes the written work looks very similar to a plan that would be submitted by the CEO and VPs in the real company. Best plans from previous years are included in the instructor's manual and used to evaluate each team's final plan. The more mature teams and the ones who have done their homework well reveal learning from mistakes as well as successes and will have mastered many of the managerial and organizational learning techniques mentioned earlier.

The purpose of The Global Strategy Simulation is not to have participants necessarily earn the most profits, acquire the largest market share or to discern the key elements in the computer model which scores the simulation. Research by the ABSEL community has learned that participants who are doing poorly on short term measurements often understand the simulation better than competitors who are earning great profits and excelling on market share. Participants, as in real life, often perform well on profitability and market share ratios—but for the wrong reason, while others implement the correct plans but perform poorly on these. Overall success is a function of the individual, team interaction, and the environment and simulated economy provided by the simulation. We focus on allowing participants to learn how to effectively develop a Global Strategic Plan. In industry, when simulations are often conducted in one week or less, teams have time only for an oral presentation with a few visuals. But cross-learning is taking place, often in a hallway across from us with the simulation a group of middle managers are studying strategy with a Harvard Professor. Many of them will return to utilize the strategy class in the next year when they play a simulation such as GSS.

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