Synopsis

We are living in the innovation-driven economy. Innovation, as is recognized, is the greatest engine that fuels growth, be it for the individual, for the organization or for the nation as a whole. There is thus great interest in understanding both its definition as well as its process. Innovation however is a complex process. Though its importance has increased over the years, there exists a clear anxiety in its understanding, as to why, when and how innovation occurs.

'Innovation by Design' authored by Gerard H. Gaynor, '*The Art of Innovation'* by Tom Kelly and Jonathan Littman and *'Effective Innovation'* by John Adair explore different facets and perspectives of innovation. While *'Innovation by Design'* provides practical understanding of innovation in terms of its definition, charactaristics and methodology, '*The Art of Innovation',* offers rich insights into the process of innovation followed at IDEO, that is now famously known as the *'IDEO way of Innovation*". *'Effective Innovation'*, on the other hand, focuses on enhancing creativity and innovation, both at the individual and organizational level.

Gerard H. Gaynor having more than 45 years experience in managing engineering and innovation believes innovation as a management discipline that demands systems approach in terms of thinking and managing resources within the constraints. Tom Kelly, the co-founder of IDEO - once described as 'the world's most celebrated design firm', recommends prototyping, brainstorming, and observations as the fundamentals of innovation. He argues that '*Innovation is about action, it isn't about perfection.'* John Adair, twice listed among the forty people worldwide who have contributed most to the development of management thought and practice, and the world's first professor in leadership studies, advocates concentrating on removing the barriers that prevents one's mental energy from producing new ideas and new ways of working. He elucidates in detail, the seven habits of the creative or innovative thinkers.

While the detailed accounts, lucidly painted with real life case studies in each of these books, makes their story and arguments all the more convincing and inspiring for the reader to try it out, together, *'Innovation by Design',* '*The Art of Innovation' and 'Effective Innovation'* would help provide the reader fairly comprehensive overview of this rather complex process of innovation.

Innovation by Design;
What It takes to Keep Your Company on the Cutting Edge
Gerard H. Gaynor

Innovation fuels organizational growth, drives future success, and is the engine that allows business to sustain their viability in a competitive global economy. Innovation is the key to any business success. Few organizations can, today, survive without focusing on innovation. As Tom Peters remind us in a 'California Management Review' article: *"Get Innovative or Get Dead."*

The author considers innovation as a management discipline. *Innovation by Design* elucidates the role of organization and in particular its management to foster sustainable culture of innovation. Innovation demands systems approach in terms of thinking, and managing and optimizing the resources within the context of a specific organizational infrastructure.

Innovation can not be delegated; neither can it be achieved through any executive level dictum. Innovation involves translating knowledge and thinking into action. The managers, the author therefore exhorts, need to change their philosophy, from managing people to leading people and managing activities. Innovation is about people, and it is about the process. The complex process of innovation depends on people and their interaction. It therefore requires creating that *innovative attitude,* and the culture that encourage innovation at all levels of the organization. This needs to be backed with adequate resources and supportive infrastructure.

Design is central to the practice of management, and also to innovation. Design creates change in products as well as lifestyles. Innovation comes about by implementing designs. Successful innovation comes from understanding a coherent set of principles and guidelines and then applying them within a specific organizational context.

According to the *Oxford Dictionary*, the word 'Innovation' first appeared around 1297. Based on various comments and references, the author arrives at the definition of innovation as *'invention + implementation / commercialization'.* Innovation begins with an idea that is then transferred into a business success. It creates new wealth rather than knowledge. As Theodore Levitt had described, *'innovation may be viewed from at least two vantage points: (1) newness in the sense that something has never been done before, and (2) newness in the sense that something has not been done before by the industry or by the company now doing it. Strictly defined, innovation occurs only when something is entirely new, having never been done before.'* Innovation is not science or technology. It begins with understanding the user/customer. Teamwork instead of individual attempts, and effective problem solvers rather than only creative people are more likely to succeed.

Innovations are, here classified into three broad categories, ie.; incremental innovations, the ones that includes improvements to currant products, processes, services and systems; new-to-the-market/society innovations, the ones that deliver new products, processes, services, and systems; and breakthrough Innovations, the ones that set the stage for the future and turn into the moments in history. Most innovations take place incrementally. Even though a concept may be recognized as a potential breakthrough, innovation success comes about incrementally over time. As the 3M statement related to introducing innovative products describes *'Make a little, sell a little, make a little more, sell a little more, and so on to learn a little, do a little, learn a little more, do a little more, and so on...'* Innovation can occur from the bottom-up or be sponsored from the top-down. Each approach has its strengths and limitations.

While there is no one specific process or methodology for innovation, the innovation process depends on the type of innovation, the timing and time to completion, the sources of innovation, the organizational infrastructure, the organizational resources, and resolving the unknowns. Innovation is not dominated by process, though it involves a process. The systems approach of the innovation process suggests the following four stages, ie.; (1) Idea-concept-invention, (2) Pre-project, (3) Project, and (4) Project - product launch/follow-up. Knowledge of why and when and how innovation occurs is limited. There are numerous sources that help spark an idea. Those supposed "eureka" moments are preceded by much thought. From 3000 unwritten raw ideas, 300 would end up being formalized in some written form, which would lead to a single success.

Innovation depends on four major elements: resources, infrastructure, culture and process. All four are equally important. Innovation can not take place if any of these four elements are missing. *Innovation by Design* while critically examining each of these elements, and in the process also identifying what makes innovation fail, recommends for a solid strategy for innovation. People, management and attitude are the three core areas that the organization needs to focus to improve its level of innovation. IPR, access to information, technological & production capability, operational facilities and finance are some of the vital elements that help successful implementation/commercialization of product idea/invention.

As the demands for faster, better and cheaper continues, innovation will take on greater significance, and new skill sets will be needed to meet these demands. These skill sets include systems and knowledge integration as well as the abilities to manage complexity and uncertainty and to work in a multicultural environment – all of these skills are the essence of innovation. The Innovator will therefore require building a *put-it-all-together competence* that includes skills, characteristics and attitudes. As Joseph Bordogna, then acting Deputy Director of the National Science Foundation, said "*The future belongs to those who can make sense of the complex, to those who can take an idea from conception*

through the functional integration of many complex technologies and disciplines to product realization, to those who can put complex products out of the door".

Innovation by Design, on the whole, provides useful and practical understanding of innovation in terms of its definition, characteristics and methodology. Presenting innovation as a design process, it offers definite road map and guidelines for successful implementation and management of innovative growth. Author's more than 45 years' experience in managing engineering and innovation, including 24 years at 3M is amply reflected from the breadth and depth of its coverage. Real life case examples, aptly used in the book, from the companies like IBM, Apple, 3M, Kodak, Procter & Gamble, etc. helps reader grasp the significance of developing and implementing comprehensive strategy for innovation to sustain and survive in these increasingly globalized markets.

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The Art of Innovation;
Lessons in Creativity from IDEO, America's Leading Design Firm
Tom Kelley with **Jonathan Littman**

Wall Street Journal had once described IDEO office as 'Imagination's playground'. And the *Fast Company* magazine called it 'the world's most celebrated design firm'. IDEO has topped, for ten consecutive years, the list of the firms that have won the most Industrial Design Excellence awards, compiled and published by the *Business Week*. Over the years IDEO has worked both as practitioners and also as advisers for the business of innovation. When it comes to designs – and innovations, IDEO today holds the best hands-on, and also what they termed as in-the-trenches experiences. Companies today are lining up to understand and learn from this process of innovation that is now so famously known as *'the IDEO way of Innovation'.*

IDEO's innovation process consists of five basic steps – understanding the problem, observation, visualization, evaluation and refinements and finally implementation of the new product for its commercialization. This fairly flexible and deceptively simple process is a blend of methodologies, work practices, culture, and infrastructure, and it is continuously refined over the years. Creating hot teams, seeing through the customer's eyes, brainstorming and rapid prototyping are some of the unique features of this process that IDEO have developed, refined and mastered over the years. *'Prototyping, brainstorming, and observations are the fundamentals as the reading, writing, and arithmetic of innovation..'* believes IDEO, further adding *'…Doodling, drawing, modeling. Sketch ideas and make things, and you are likely to encourage accidental discoveries.'*

Central to the IDEO innovation process is *Focused Observation*. Astute observation helps bring in critical new insights and new directions for innovations. As Leon Segal, IDEO human factors expert mentions *'Innovation begins with an eye'* further adding *'seeing and hearing things with your own eyes and ears is a critical first step in improving and creating a breakthrough product.'* It also helps bridge the gap between familiar and genuinely new ideas through trade offs that users will accept. IDEO believes in going to the source, to the actual people who use the product or may be the user of their new designs. Inspirations / new ideas come from being close to the action.

'Best products embrace people's differences' IDEO have learnt over the years from studying people / consumers of all shapes, sizes, cultures and ages. Developing empathy for the user is therefore important for the designer / innovator to get at the motives, emotions and underlying psychology of his/her interaction with the product/services.

Teams are the heart of the IDEO method. The loan genius is a myth, believes IDEO that can hamper company's efforts in innovation and creativity. Creation of 'hot teams' is therefore one of the critical elements of the innovation process at

IDEO. With their open style of innovation –brainstorming, prototyping, and problem solving – IDEO favors those who take action. Total dedication, tangible and clear goals and deadlines, nonhierarchical and well rounded diverse group, mutual respect, flexibility and empowerment, ability to take responsibility and calculated risks, etc. are some of the characteristics of these 'hot groups'. Putting together such team is an art, cautions IDEO. The visionary, the troubleshooter, the iconoclast, the craftsman, the technologist, are some of the characters recommended for the team that will help bring in much needed variety and the holistic perspective. Teams are regrouped with every new projects at IDEO, and the member/ employee select his/her own team based on interests and passion.

'When it comes to brainstorming, nobody does it better than IDEO' wrote Tom Peters in the *Foreword* of this book. Brainstorming is the idea engine of IDEO's culture, and they have mastered it over the years to most effectively utilize the collective wisdom of the team to generate variety of ideas in short span of time or to help crack any tough problems. Practiced nearly every day at IDEO, they have now developed firm idea about what constitutes a brainstorm and how it should be organized. Simple and well-honed problem statement, encouraging wild ideas, emphasizing quantity, avoiding debates and critiques, encouraging visual representation, numbering ideas etc. are some of the guidelines they have developed for effective brainstorming sessions. Sixty minutes, they suggest, being the optimum length for any brainstorming session. Good brainstorm, besides putting the team on course by providing solid leads, creates ripple effect, thereby taking the team to higher levels.

A playful, iterative approach to problem is one of the foundations of their culture of prototyping. *"Build to Learn"* is therefore the IDEO mantra. Innovations would stop if prototypes are stopped being built, believes IDEO. Quick prototyping is about acting before you have got the answers, about taking chances, stumbling a little, but then making it right. It helps resolve problems one by one. Like that great old saying, *'a picture is worth a thousand words'*; IDEO has experienced that *'a good prototype is worth a thousand pictures.'* Good prototypes don't just communicate – they persuade.

'*Hire the right people and everything else will take care of itself*' believes David Kelly, the founder of IDEO. *Esquire* had voted David Kelly, one of the "21 most important people of the 21st century". David believed that if he hired people he liked and respected, everybody would have fun and get more work done. He has succeeded in creating a culture at IDEO that encourages creativity, embraces risks and wild ideas and tolerates the occasional failures. Spirit and sense of playfulness therefore invades every aspects of their creative work. Childlike curiosity and enthusiasm is a second nature at IDEO. At IDEO one would not find "they". "They" do not innovate, believes IDEO.

According to IDEO, creating a great work environment is nearly as important as hiring the right people. It can be a valuable team-building exercise. The space

should be a comfortable blend of openness and privacy, so as to provide ample opportunities for serendipitous encounters as well as focused work. It should encourage its occupants to celebrate their work and their hobbies. The space should tell stories – about their work and the company. The space generally evolves with teams and projects. Companies that depend on the creativity of their staff need to give them free reign when it comes to space.

Ideas for new products and services often come from the places and sources you least suspect. IDEO terms this approach as “cross-pollination”. According to them, this “cross-pollination” approach is kind of alchemy of innovation. It therefore recommends *being continuously involved in innovation with disparate industries*, so as to increase innovation vocabulary, thereby increasing the opportunities for cross-pollination. Cross-pollination demands constant learning and also making time or creating a place for new ideas. Holding open houses, hiring and inviting outsiders for presentations, changing hats, surfing/browsing magazines and internet etc. are some of the ways IDEO have used to encourage cross-pollination.

Innovation does not come about by central planning. Serendipity plays a critical role in innovation. One occasionally stumbles, in spite of following the process and practicing design and innovation for years. One can’t completely predict a product’s success or what feature or use will catch the public’s imagination. Myriad factors can influence the failure or success of innovation. Chances has played role in all kinds of breakthroughs, from science to technology and business. ‘*One critical element that every team or company involved in design and innovation should come to expect: the unexpected.’* suggests IDEO, from their experience of working on thousands of projects.

When it comes to design, IDEO, the leading design consultancy house today, with their experience of working on more than four thousand products and services, with diverse industry segments, firmly believes that it is ultimately about some sort of human experience. And designing new experiences is usually about figuring out a way to connect with people. *‘Well designed experiences strike a nerve with the public’* believes IDEO*.* Any product or service can be turned into a better-designed experience that resonates with the customers.

The art of Innovation thus provides an inspirational journey and rich insights into the process of Innovation that is followed at IDEO. Various real life examples and case studies, used in the book make the story and the argument all the more powerful and convincing for both the individuals as well as the organizations to go out and try out for oneself. ‘*Innovation is about action, it isn’t about perfection.’* believes IDEO, further adding *‘the person who toils endlessly at his desk is not likely the person who is going to hatch a great innovation’.* At a time when creativity and innovation are recognized as a major driving force for the industry and organizations, this detailed account, provided in a simplistic form, will certainly help create an environment that is conducive to innovation.

Effective innovation;
How to stay ahead of the competition
John Adair

Innovation is the *process of taking new ideas through to satisfied customers*. Effective innovation, according to John Adair, therefore encompasses three overlapping dimensions situated like an oyster shell. These includes – you (as an individual), team/s (that also include you), and the organization. The individual/you, here, are the center of the entire process of innovation, as only individual will have new ideas. But taking ideas to market involves team work, for one person cannot do it on their own. Innovation therefore requires teams. The *group personality* of the organization, known commonly as *culture*, plays a vital role in innovation. The organization generally will be more than the sum of its parts, that is the individual and the teams.

In today's knowledge and innovation-driven economy, the success and also the long-term employability of the worker/individual depends largely upon his/her mental, and creative, contribution. Creative thinking or having new ideas has thus become an ever more important part of work. While most literature available on the subject focuses on developing and/ or improving one's creative ability, the author advocates instead, to concentrate on removing the barriers or blocks that prevents one's mental energy from producing new ideas and new ways of working. Creative thinking is natural to homo-sapiens as a whole. Perception, ideas and feelings are combined to create new concept or vision. Creation therefore, is more in the mind. The biggest barrier, therefore states author, is *'believing you are not creative.'*

According to the *model of the mind*, developed by the author, thinking involves three meta-functions, namely: analysis, synthesis, and valuing. These three meta-functions interlock together like a jigsaw puzzle. Also the balance between them changes every moment and with every person. Analysis primarily means resolving into simple parts and tracing of things to their sources. Synthesis means putting together of parts or elements, so as to make up a complex whole. And valuing, or thinking in relation to values or standards, lies at the core of judgment, including choices or decision between options. These three meta-functions that work at the conscious level, combined with the depth of mind –sub conscious level (intuition, emotion, motivation etc.), creates a complex whole of thinking that takes place at pre-conscious, semi-conscious and/or un-conscious level. The analysts who likes dissecting or taking things to bits, will have limited role here in the creative or innovative process, where as synthesizing process may result in new and/or original – that is creative outcomes. Holistic people, when it comes to creativity, will have a head-start.

Creative thinking is both a supremely solitary craft and yet also intensely social in nature. On the one hand, states author, you need unhurried time on your own to think, both about specific problems and about more general issues in your field. On the other hand, however creative thinking is an intensely social activity. One

can hardly think at all without the stimulus and information inputs of other people's minds. One therefore has to learn to manage the balance between these necessary solitude or time on your own to think and the necessary social intercourse with others.

The author elucidates in detail, the seven habits of the creative or innovative thinkers. Habits, according to the author, are the approaches that get fixed through repetition and become second nature to the person. The first, of these seven habits, is challenging the unconscious assumptions, preconceptions and/or misconceptions. Detached and objective analysis, coupled with wide span of relevance helps one cross the boundary and connects the hitherto unconnected domains, for original and creative solutions. The second habit of creative thinkers is to be especially aware and observant of everything that is happening in the vicinity. As is said, *'chance favors only the prepared mind'*, one therefore has to be exceptionally sensitive to any occurrence which might be relevant to that search. Many of the inventions have been the results of such unexpected or chance occurrences. The third habit is to listen to what is going on inside one's depth or unconscious mind. 'Sleeping on a problem', if one is stuck, is more likely to provide/ strike some indication of a solution, or a clue. The fourth habit of the creative people, the author terms it as "suspended judgment", further explaining, *'if you want to encourage new ideas don't evaluate too soon: give your seeds a chance to grow*'. One therefore needs to separate evaluation from synthesizing, imagining and holistic thinking. The fifth habit, recommends the author, is to make strange familiar and familiar strange. Analogizing – that is connecting unfamiliar/strange with familiar; helps explore and understand the unfamiliar. While the reverse process, that is making familiar strange, helps one break out of conventional beliefs and attitudes. Sixth habit of creative people is having a higher threshold of tolerance to ambiguity. Uncertainty, complexity and apparent disorder are part of life that often produces the best results. As is said - *'good idea can be the enemy of best idea',* one therefore needs to control impulsive and premature solutions. The seventh habit calls for constantly collecting new ideas, data and/or impression, as the author named, developing *idea bank* in our mind that can then be summoned for creative solutions. This calls for inculcating curiosity, observation, listening, reading, traveling and recording as the essential habits.

The innovation process, informs the author, generally falls under three major phases, that are; *generating ideas, harvesting ideas* and *developing and implementing these ideas*. The common factor in these phases is -*Teamwork*. The team, as is defined by the author '*is a form of work group in which the members possess complementary skills that fit together like a jigsaw puzzle and create synergy – the confined action that is greater than the sum of the parts taken independently.'* Team is here clearly differentiated from the group, which is generally associated with its limitations in terms of creative thinking and decision making. The process of innovation, being largely incremental, demands efforts and contribution of entire team, to convert ideas into marketable products

/solutions. Team synergy, to build upon or improve other people's ideas is therefore at the core of team creativity. Some of the important factors that help stimulate or encourage creativity, both at the individual and team level are recognition and appreciation, freedom to work in areas of greatest interest, contacts with stimulating colleagues, stimulating projects to work on, and freedom to make mistakes.

Leader of the team here plays a key role to effectively coordinate this process of innovation and to achieve the goal/tasks. For this he/she needs to build the creative team and maintain its morale and motivation. Developing the individual/ team-member is central to this team building process. The first step towards team building is therefore to choose the right people. Encouraging group creative synergy, training the team, communicating about innovation, overcoming the obstacles, are some of the other steps, suggested for building the creative team. The leaders who encourage creativity, studies have identified, have some distinctive characteristics that include willingness to accept risk, ability to work with half-backed ideas, a willingness to bend rules, ability to respond quickly and personal enthusiasm. *Ideas leading to innovation are more likely to come from people when their leaders expect them.* Leaders create a climate of change. They are *'often obsessed by their ideas, which appear visionary and consequently excite, stimulate and drive other people to work hard and create reality out of fantasy',* defined prof. Abraham Zaleznik, a professor at the Harvard Business School.

The third dimension of the *oyster-shell model* of innovation is the Organization. As for innovation, *none of us is as good as all of us.* The importance of organizational culture, climate, resources and ethos favorable to creativity is widely recognized. *'The creative act thrives in an environment of mutual stimulation, feedback and constructive criticism – in a community of creativity',* defined William Brady. Innovative organizations are the end products of good leadership and management that thrive on creative community. Clear direction and top level commitment; flat, non-hierarchical and flexible organizational structure; decentralized decision making and developed responsibility; informal, open and constructive communications, lateral as well as vertical interaction; minimum rules and regulations and positive but calculated risks are some of the highlights of innovative organizations. *'One should recognize and manage innovation as it really is – a tumultuous, somewhat random, interactive learning process linking a worldwide network of knowledge sources to the subtle unpredictability of customers' end uses'* , thus is described by James Brian Quinn, the nature and complexity of managing innovation. The organizations, to maintain their innovative edge, will need to keep pace with the rapidly changing markets of today. There is no time to sit back and admire past successes. *'A good reputation is history, nothing more'*, advises author.

To maintain its constant pace of innovation, and new idea being central to innovation, the organization would constantly need lot of new ideas. The

organization therefore needs to consciously build an environment that encourages creativity at all its levels. Brainstorming meetings, suggestion schemes, special events and publicity, internal newsletter, special prizes and competitions are some of the methods to foster innovation attitude in the organization. *'Innovation has to be market-driven – and driven to market'*, explains author, *'the organization therefore should be analogous to a market - internal market, in which ideas are up for sale.'* The success in the outside market thus depends upon the effective working of this *internal market*. And here new ideas can come from various different sources, both internal as well as external, including its customers/users, suppliers, competitors etc. People with 'hands-on' involvement are more likely to come up with new ideas. These ideas will have to go through careful and rigorous process of evaluation and testing. The inventor here needs to take the onus, as only he/she can, to persuade and convince others and to the organization, the benefit/s of the new change. *'It is useless to be a creative thinker unless you can also sell what you create',* says the advertising magnet David Ogilvy, '*management cannot be expected to recognize a good idea unless it is presented to them by a good salesman.'* The organization should therefore encourage their internal innovator/s – or as the author termed it, the intraprenure/s. Persistence and perseverance will be the important quality demanded from these intraprenures, to take their ideas through to the markets.

John Adair, the author, has been twice listed among the forty people worldwide who have contributed most to the development of management thought and practice. Internationally known author of publications - *effective decision making, effective leadership, effective motivation,* part of his series of publications on *effective leadership and management*, he is also the world's first professor in Leadership Studies. For the companies to survive in this era of innovation-driven economy, he advises, *'Organizations that put their heads in the sand and ignore change may find that they have to make sudden and relatively great change in order to catch up and survive. This form of crisis management should be avoided',* further adding, *'Gradual or incremental change is much better. Innovation should always be evolutionary rather than revolutionary.'* Looking at both creativity and innovation, at the individual and organizational level, *effective innovation,* provides complete guide for creating innovative organizations.

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