Welcome to PDMA-India

Presenter
Jegan Jayabal, BE, MBA
Business Consultant

Preparation and Alternatives

Three forms of Human Creativity

▸ Artistic creativity

▸ Scientific creativity

▸ Inventive creativity

  ▸ MBTI Creativity Index - https://www.16personalities.com/free-personality-test

Degree of artistic creativity → **Painter composer**

No Creativity

Degree of scientific creativity

Inventive creativity
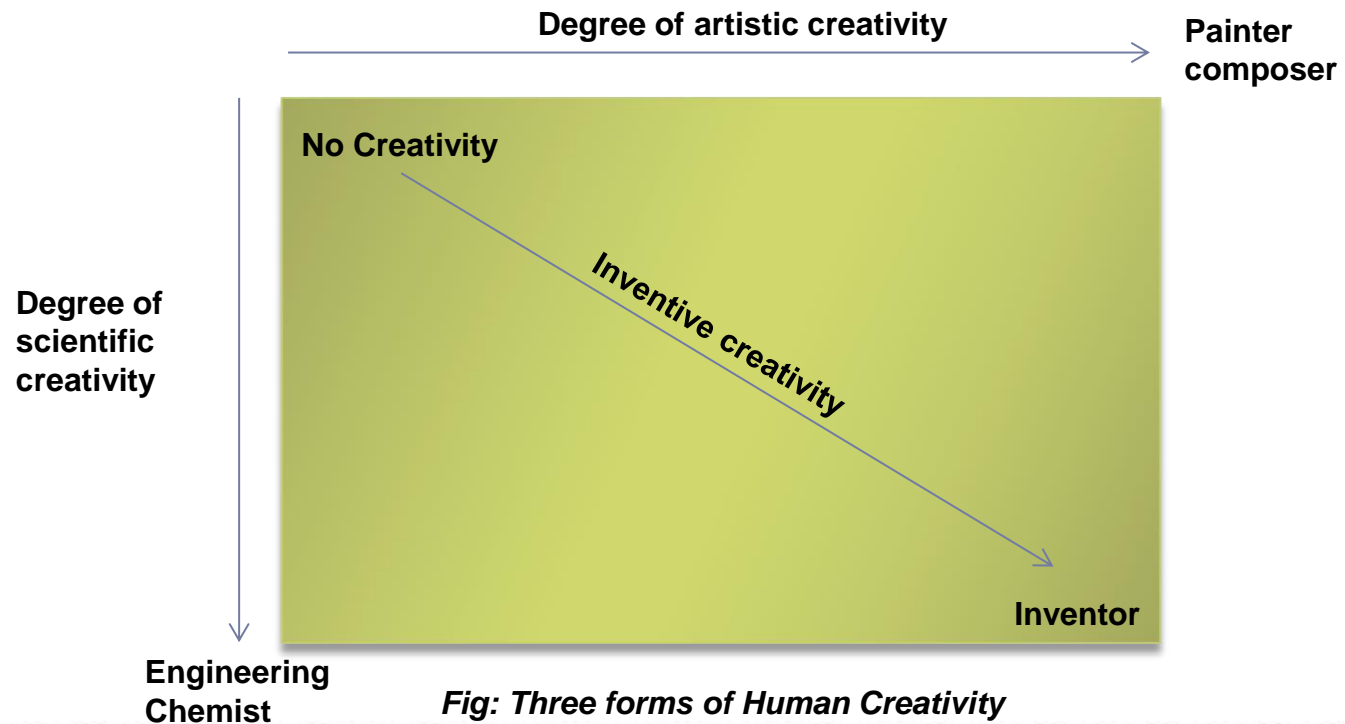
Inventor

Engineering Chemist

Fig: Three forms of Human Creativity

Genius Thinking Strategies

▸ **Geniuses find many different ways to look at a problem.** Einstein, for example, and da Vinci, were well known for looking at their problems from many different perspectives.

▸ **Geniuses make their thoughts visible.** Da Vinci's famous sketches, and Galileo's diagrams of the planets, allowed them to display information visibly rather than relying strictly on mathematical analysis.

▸ **Geniuses produce.** Thomas Edison had a quota of one invention every ten days. Mozart was among the most prolific composers over his short life.

▸ **Geniuses make novel combinations.** Einstein found the relationship between energy, mass, and the speed of light (the equation $E=mc^2$).

Genius Thinking Strategies

▶ **Geniuses force relationships.** They can make connections where others cannot. Kekule dreamed of a snake biting its tail, immediately suggesting to him that the shape of the molecule he was studying (benzene) was circular.

▶ **Geniuses think in opposites.** This will often suggest a new point of view. Physicist Neils Bohr conceived of light as being both a wave and a particle.

▶ **Geniuses think metaphorically.** Bell thought of a membrane moving steel, and its similarity to the construction of the ear; this led to the development of the telephone earpiece.

▶ **Geniuses prepare themselves for chance.** Fleming was not the first to see mold forming on a culture, but was the first to investigate the mold, which eventually led to the discovery of penicillin.

Historic Roadblocks to Creativity

▸ "I think there is a world market for maybe five computers." **Thomas Watson, Chair, IBM, 1943.**

▸ "Computers in the future may weigh no more than 1.5 tons." **Popular Mechanics, 1949.**

▸ "I can assure you that data processing is a fad that won't last out the year." **Business books editor, Prentice-Hall, 1957.**

▸ "So we went to Atari and said, ...'We'll give it to you. We just want to do it. Pay our salary, we'll come work for you.' And they said no. So then we went to HP, and they said 'We don't need you, you haven't got through college yet.'" **Steve Jobs, co-founder, Apple Computers.**

▸ "640K of RAM ought to be enough for anybody." **Bill Gates, Microsoft, 1981.**

Historic Roadblocks to Creativity

▸ "Who the hell wants to hear actors talk?" **H.M. Warner, Warner Bros., 1927.**

▸ "Stocks have reached what look to be a permanently high plateau." **I. Fisher, Prof. of Economics, Yale, 1929.**

▸ "We don't like their sound, and guitar music is on the way out." **Dick Rowe, Decca Records executive, rejecting the Beatles' demo tape, 1962.**

▸ "This 'telephone' has too many shortcomings to be seriously considered as a means of communication [and] is inherently of no value to us." **Western Union, 1876.**

▸ "Heavier-than'air flying machines are impossible." **Lord Kelvin, President, Royal Society, 1895.**

▸ "Everything that can be invented has been invented." **C. H. Duell, Commissioner, U.S. Office of Patents, 1899.**

Barriers to Firm Creativity

▸ **Cross-functional diversity:** Diversity leads to more creative stimulation but also to problem solving difficulties.

▸ **Allegiance to functional areas:** Team members need to have a stake in the team's success, or else they will be loyal to the functional areas not to the team.

▸ **Social cohesion:** If interpersonal ties among team members are too strong, candid debate may not occur, resulting in less innovative ideas.

▸ **Role of top management:** Management should encourage the teams to be adventurous, otherwise only incremental changes will occur.

The Role of Management in Stimulating Creativity

▸ Recognize individuality

▸ Be tolerant of mistakes

▸ Be supportive under stress

▸ Techniques include:

    ▸ Competitive teams

    ▸ Idea bank of unused ideas for possible reuse

    ▸ Encourage interaction – even in how offices are laid out

Required Inputs to the Creation Process

▸ Form (the physical thing created, or, for a service, the set of steps by which the service will be created)

▸ Technology (the source by which the form is to be attained)

▸ Benefit/Need (benefit to the customer for which the customer sees a need or desire)

▸ Technology permits us to develop a form that provides the benefit.

Some Patterns in Concept Generation

▸ Customer need → firm develops technology → produces form

▸ Firm develops technology → finds match to need in a customer segment → produces form

▸ Firm envisions form → develops technology to product form → tests with customer to see what benefits are delivered

Note: the innovation process can start with any of the three inputs.

What is a Product Concept?

▸ A product concept is a verbal or prototype statement of what is going to be changed and how the customer stands to gain or lose.

▸ Rule: You need at least two of the three inputs to have a feasible new product concept, and all three to have a new product.

Why Do You Need a Product Concept and Not Just an Idea?

▸ Needed to judge whether it is worthy of development

▸ Potential customers do not have enough information to judge the worthiness of an idea: the product concept gives them the required information.

▸ Ex.: Would we offer taxi rupees 3 per km operating cost? (need)

  ▸ Not if it used mobile technology to pool rides (need plus technology)

New Product Concepts and the New Product
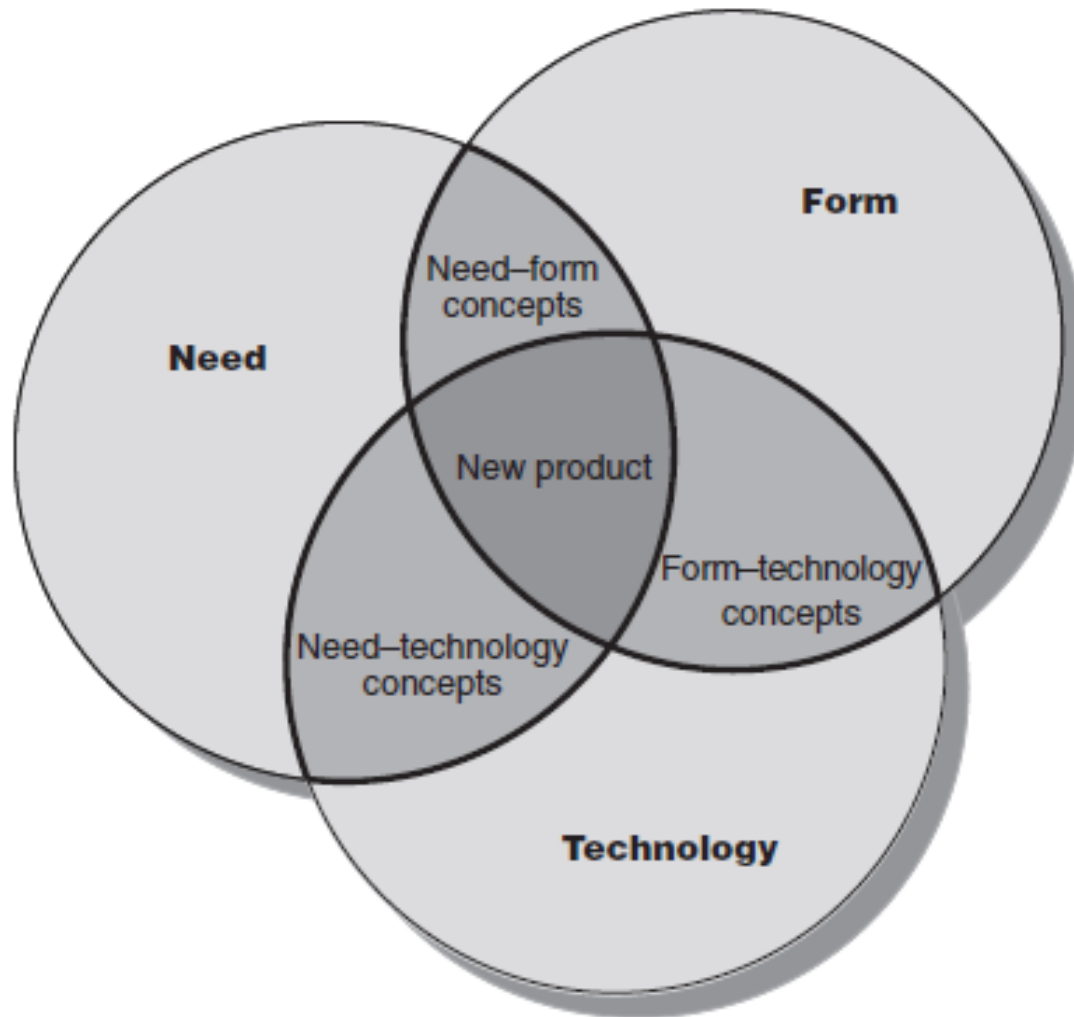
The Designer Decaf Example

▸ Benefit: "Consumers want decaffeinated espresso that tastes identical to regular."

▸ Form: "We should make a darker, thicker, Turkish-coffee-like espresso."

▸ Technology: "There's a new chemical extraction process that isolates and separates chemicals from foods; maybe we can use that for decaffeinating espresso coffee."

Why would each of these taken individually not be a product concept?

The Toilet Brush Example

▸ Idea: A new and improved toilet brush.

▸ Concept: A toilet brush that contains detergent, refillable, and easy for the customer to attach to the handle.

▸ Product (executions of this concept):

  ▸ Lysol Ready Brush

  ▸ Scrubbing Bubbles Fresh Brush

  ▸ Clorox Toilet Wand

  ▸ Others?

What a Concept Is and Is Not

▸ IS: "Learning needs of computer users can be met by using online systems to let them see training videos on the leading software packages." (good concept; need and technology clear)

▸ IS NOT: "A new way to solve the in-home training/educational needs of PC users." (need only; actually more like a wish)

▸ IS NOT: "Let's develop a new line of instructional videos." (technology only, lacking market need and form)

Methods for Generating Product Concepts

Two Broad Categories of Methods:

▸ Gathering Ready-Made Product Concepts

▸ Using a Managed Process Run by the New Products Team

Best Sources of Ready-Made New Product Concepts

- New Products Employees
  - Technical: R&D, engineering, design
  - Marketing and manufacturing
- End Users
  - Lead Users
- Resellers, Suppliers, Vendors
- Competitors
- The Invention Industry (investors, etc.)
- Idea exploration firms and consulting engineers
- Miscellaneous (continued)

Best Sources of Ready-Made New Product Concepts (continued)

▸ **Miscellaneous Categories**

  ▸ Consultants

  ▸ Advertising agencies

  ▸ Marketing research firms

  ▸ Retired product specialists

  ▸ Industrial designers

  ▸ Other manufacturers

  ▸ Universities

  ▸ Research laboratories

  ▸ Governments

  ▸ Printed sources

  ▸ International

  ▸ Internet

Lead Users

▸ An important source of new product ideas.

▸ Customers associated with a significant current trend.

▸ They have the best understanding of the problems faced, and can gain from solutions to these problems.

▸ In many cases, have already begun to solve their own problems, or can work with product developers to anticipate the next problem in the future.

Toolkits for User Innovation

▸ A set of design tools that customers can use to customize a product best suited to them.

▸ Can incorporate CAD/CAM or rapid prototyping.

▸ Example: International Flavors and Fragrances: Internet-based toolkit that provides a database of flavor profiles and rules on how to combine them. Customer can specify flavor mixes that are immediately made into samples; customer can then make adjustments until the desired flavor is obtained.

Open Innovation

▸ The process by which a firm searches for research, innovation, technologies, and products.

▸ Increases speed of research and innovation, cuts risks, and generates new innovative ideas.

▸ Viewed by some as the dominant innovation model of the 21st century.

▸ Inputs can come from internal sources (marketing, strategic planning) and external ones (customers, market information, etc.).

▸ Sources such as inventors, startup companies, or university laboratories are actively sought out.

Open Innovation at Work: P&G

▸ P&G's "Connect and Develop" program, designed to allow for internal intellectual property to be marketed outside, spun off, or licensed.

▸ Avoids the "not invented here" syndrome.

▸ To execute Connect and Develop, P&G assigned a team to find external partners, build brand equity, access new technologies, and create new product categories.

▸ Examples:

  ▸ SunHealth Solutions (a P&G partner) developed the UV sensing technology used in Huggies swimpants with UV sensors, that help parents monitor their child's exposure to UV radiation.

  ▸ Mr. Clean scrubbing brush uses technology originally used as insulation in the auto industry.

  ▸ Magic Eraser cleaning pad was sourced from a German chemicals company, and first noticed by P&G in use in Japan.