“Right” Things for “Left-Brainers”

Interdisciplinary Nature of Innovation
Bridge to the Future. Can We Build It?

INNOVATION

Past Experience

Present

Future Vision

Dr. Gregory J. Kivenzor
Interdisciplinary Innovation
Driver of Innovation: Think or... Feel?

Perception of “new”:

Logical
- Science
- Technology
- Engineering
- Mathematics

Intuitive
- Art
- Social Science
- Management
- Marketing
- Ethics
- Aesthetics

Dr. Gregory J. Kivenzor
Interdisciplinary Innovation
What Is Innovation?

Innovation = Creativity ♠ Risk Taking

Dr. Jacqueline Byrd
Silo Traditions in Higher Education

DEGREES AWARDED: Percentage distribution of degrees conferred by field of study among reporting G-8 countries: 2004

Country | Engineering | Sciences, mathematics, and computer science | Arts and humanities | Health | Education | Business, social sciences, and other
--- | --- | --- | --- | --- | --- | ---
OECD average | 12 | 11 | 12 | 12 | 14 | 40
Canada | 8 | 12 | 14 | 10 | 14 | 43
France | 12 | 16 | 17 | 3 | 9 | 43
Germany | 16 | 14 | 15 | 3 | 8 | 33
Italy | 15 | 7 | 12 | 16 | 8 | 41
Japan | 20 | 5 | 18 | 6 | 6 | 45
United States | 6 | 10 | 15 | 8 | 13 | 48


Dr. Gregory J. Kivenzor Interdisciplinary Innovation
## Disciplinary Borders = Mental Divide

<table>
<thead>
<tr>
<th>Field of study</th>
<th>Master's degrees</th>
<th>Doctor's degrees (Ph.D., Ed.D., etc.)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Male</td>
</tr>
<tr>
<td>All fields, total</td>
<td>574,618</td>
<td>233,590</td>
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<tr>
<td>Business, management, marketing, and services</td>
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<td></td>
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<tr>
<td>Biological and biomedical sciences</td>
<td>8,199</td>
<td>3,358</td>
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<tr>
<td>Engineering and engineering technologies</td>
<td></td>
<td></td>
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<tr>
<td>Physical sciences and science technologies</td>
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<tr>
<td>Biological and biomedical sciences</td>
<td>8,199</td>
<td></td>
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<tr>
<td>Mathematics and statistics</td>
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<tr>
<td>Multi/interdisciplinary studies</td>
<td>4,252</td>
<td>1,440</td>
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<tr>
<td>Parks, recreation, leisure and fitness studies</td>
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<td>Philosophy and religious studies</td>
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<tr>
<td>Physical sciences and science technologies</td>
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<tr>
<td>Computer and information sciences and services</td>
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<tr>
<td>Public administration and social service professions</td>
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<td>Security and protective services</td>
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<td>Social sciences and history</td>
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<td>Theology and religious vocations</td>
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<td>3,469</td>
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<tr>
<td>Transportation and materials moving</td>
<td>802</td>
<td>679</td>
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<tr>
<td>Visual and performing arts</td>
<td>13,183</td>
<td>5,646</td>
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Innovation Sequence

**Left-Brainers**
- New technology
- New application
- New product
- Who is a customer?

**Right-Brainers**
- Which technology?
- Product specs
- Business solutions
- Customer needs

Dr. Gregory J. Kivenzor  
Interdisciplinary Innovation
Impenetrable Wall or Just Mental Block?

Science
Technology
Engineering
Mathematics

Art
Social Science
Management
Marketing
Ethics
Aesthetics

Left
Right

Dr. Gregory J. Kivenzor
Interdisciplinary Innovation
## Top Patent Performers of 2007

Who these patents target: **Left** or **Right**-Brainers, or both?

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company Name</th>
<th>Patents</th>
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<tbody>
<tr>
<td>1</td>
<td>INTERNATIONAL BUSINESS MACHINES CORP</td>
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<tr>
<td>2</td>
<td>SAMSUNG ELECTRONICS CO LTD KR</td>
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<td>3</td>
<td>CANON K K JP</td>
<td>1987</td>
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<td>4</td>
<td>MATSUSHITA ELECTRIC INDUSTRIAL CO</td>
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<td>5</td>
<td>INTEL CORP</td>
<td>1865</td>
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<td>6</td>
<td>MICROSOFT CORP</td>
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<td>7</td>
<td>TOSHIBA CORP JP</td>
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<td>8</td>
<td>SONY CORP JP</td>
<td>1481</td>
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<tr>
<td>9</td>
<td>MICRON TECHNOLOGY INC</td>
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<td>10</td>
<td>HEWLETT-PACKARD DEVELOPMENT CO L P</td>
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Source: IFI Patent Intelligence
Silo Thinking Hurts Innovation

CULTURAL SILOS

FUNCTIONAL SILOS

DISCIPLINARY SILOS

Dr. Gregory J. Kivenzor  Interdisciplinary Innovation
Silo Mentality Leads to Silo Behavior
Breaking the Silo Box

Dr. Gregory J. Kivenzor  Interdisciplinary Innovation
Solutions, Solutions, Solutions…

“Synthetic” Programs:

• Management of Technologies
• Technological Entrepreneurship
• Professional Science Master’s
Think + Feel = Harmony

INNOVATION
Bridge to the Future. Yes, We Can!

Past Experience

Present

Future Vision

INNOVATION
Questions and comments are welcome …
As always!