Regional Innovation, Entrepreneurship and Talent Systems

Prof. Dr. Philip Cooke
Centre for Advanced Studies
Cardiff University
World Bank Benchmarking: GDP & Knowledge Economy

Benefits of a Knowledge Economy

Strong correlation between GDP/Capita and Knowledge Economy Index.

The Knowledge Economy Index, calculated by the World Bank Institute, is based on the average of the performance scores of a country or region in all four pillars related to the knowledge economy:
- Economic incentive regime
- Education
- Innovation
- Information and communication technology
Creative Class Theory 1: Does Creative LQ 1991 Have Positive Association with Demographic Growth 1996-2002?

$$R^2 = 0.1165$$

$$y = 5.631x - 3.52$$
Creative Class Theory 2: Does Creative Class LQ 1991 Have Positive Association with Employment Growth 96-03?

\[ R^2 = 0.0316 \]

\[ y = 7.1723x - 0.5994 \]
RIS Support System for Creative Region

Creative Region

Knowledge Exploitation

Regional Innovation System

Knowledge Exploration

Knowledge Transfer & R&D Outsourcing

Cultural Economy & Creative Industries

Financing Creativity & Innovation

Knowledge Entrepreneurship
Inside the ‘Black Box’ RIS in the Creative RIS Region

The Creative Region

Regional Innovation System

Regional knowledge culture
Regional Social capital
Globalising Network Relations
Regional Institutions
Policy

Cluster Variety

Biotech Cluster
Creative Cluster
ICT Cluster

Knowledge Transfer and R&D Outsourcing

Knowledge Transfer
R&D Outsourcing
Knowledge Community
What are Knowledge Entrepreneurs?

<table>
<thead>
<tr>
<th>Problem-Solvers / Seekers</th>
<th>Entrepreneur</th>
<th>C&amp;D Strategy</th>
<th>Channels</th>
<th>Exploiters</th>
</tr>
</thead>
<tbody>
<tr>
<td>- BrainStore</td>
<td>- Strategos</td>
<td>- YourEncore</td>
<td>- Transitions</td>
<td>- Intellectual Ventures</td>
</tr>
<tr>
<td>- Root Learning Inc.</td>
<td>- Root Learning Inc.</td>
<td>- NineSigma</td>
<td>Cambridge/MIT Institute</td>
<td>- Acacia</td>
</tr>
<tr>
<td>- Intellectual Ventures</td>
<td>- Yet2.com</td>
<td>- Yet2.com</td>
<td>- Honey Bee</td>
<td>- PAN-IP</td>
</tr>
<tr>
<td>Researchers</td>
<td>- Deveraux &amp; Deloitte</td>
<td>- Innocentive</td>
<td>- Transitions</td>
<td>- Intellectual Ventures</td>
</tr>
<tr>
<td>- Copal Partners</td>
<td>- Copal Partners</td>
<td>- Innovation</td>
<td>- Cambridge/MIT Institute</td>
<td>- PAN-IP</td>
</tr>
<tr>
<td>- Fresh Minds</td>
<td>- Fresh Minds</td>
<td>- Partnership</td>
<td>- Honey Bee</td>
<td>- PAN-IP</td>
</tr>
</tbody>
</table>
Academic Entrepreneurship
Bioscience Millionaires from Oxford University

Oxford University
Medicine      Anatomy Engineering    Chemistry      Biology

Biochemistry

Oxford Gene Technology – founded 1995 many patents

Biosensors – formed 2000. Pfizer partnership 2004

Powderject – sold to Chiron/Novartis - €770 million

VASTox – IPO 2004 - €85 million

Oxford Glycosciences – 2005 market cap. €936 mn

Oxford Biomedica – 2006 market cap. - €200 million

Oxford Molecular – Acquired by Accelrys – market cap €200 mn.
Serial entrepreneur effect on university spin-offs

- approx. 3% of the NTBFs are established by an “external entrepreneur” commercializing university research
- university research is the most frequent source of ideas among “external ideas”
- “external entrepreneur-USOs” have the highest initial growth of all NTBFs...
- ... which in turn means that including “external entrepreneur-USOs” as academic spin-offs results in university spin-offs demonstrating at least as high growth as other NTBFs
San Diego Biotechnology Cluster

University of California San Diego

35 Faculty Founded

26 Tech’gy Spinoffs

149 San Diego Entrepreneurs

45 San Diego Research Institute Founded

50 UCSD Advisors

10 Board Links
Problems with Sectors and Clusters: Industry Perspective

• Critiques from industry
  – Tick box mentality
  – ‘Picking winners’
  – ‘One size fits all’
  – ‘Key sectors’ policy rigidities
  – Policy ‘retro-models’ (e.g. clusters)

• Industry thinking
  – Platforms
  – Pervasive Applications
  – Variety & Flexibility

Lateral Cluster Platform Policy

- E-security
- Mechatronica
- Feed – food – health
- Telematica Communicatie
- Micro-elektronica Nanotechnologie
- DSP-Valley
- L-SEC
- Leuven.Inc
- Life sciences
Innovative Policy Platform *Theory* for Constructing Regional Advantage

**Industry Platform**
- ICT
- Biotech
- Finance
(Related Variety)

**Stakeholder Platform**
- University
- Industry
- Governance
(Triple Helix)

**Innovative Policy Platform**
- Economy
- Talent
- Infrastructure
(Vertical & Lateral)

**REGIONAL CONSTRUCTED ADVANTAGE**
Lateral System Support

- Knowledge centres
- Entrepreneurs
- Seed Money
- Capital markets
- Infrastructure
- Role Models
- Cluster Policy
- Presence of international companies
- Networks
- Government
- Quality of Life
# Performance Indicators

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2010 (est.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N° of companies</td>
<td>&gt;300</td>
<td>400</td>
</tr>
<tr>
<td>Turnover</td>
<td>4.5 bn. €</td>
<td>8 bn. €*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>* Growth 10 %</td>
</tr>
<tr>
<td>Jobs</td>
<td>15,500</td>
<td>20,000</td>
</tr>
</tbody>
</table>

1/10/2006
Fig 3 RELATED VARIETY PLATFORM: Forestry Diversification

FORESTRY
- Information Technology
  - Sensors, measuring & control
  - Computational intelligence, simulation and machine vision
  - Multimedia and telecommunication
  - Tomography

FOREST INDUSTRY
- Manufacturing Technology
  - Forestry machines
  - Process & production machinery
  - Materials technology

FOREST INDUSTRY
- Pulp & Paper Technology
- Wood Products Industry
  - Machines, Machinery & Processes

Construction & Wood technology
- Rot protection
- Gene technology
- Markets
  - Quality
  - Price
  - Environmental

Chemical Technology
- Bleaching
- Surface treatment
- Pigments, adhesives

Biotechnology
- Enzymes

Energy & Environmental technology
- Combustion Technology
- Energy saving
- Emissions

Logistics, assembly
Platform Policies: Japan

Strengthening policies for advanced component/materials industries

- Extensive accumulation of advanced components/materials industries is the origin of strength of New Cutting-Edge Industries.

- In FY2005, METI is preparing a new program “Support Program for Advanced Components/Materials Industry and Small and Medium-Sized Manufacturing Enterprises”.

[Diagram showing various components and industries related to technology and manufacturing.]
Northern California

Alice Waters
Executive Chef and Owner

Alice Waters graduated from the University of California at Berkeley in 1967 with a degree in French Cultural Studies, and trained at the Montessori School in London before spending a seminal year travelling in France.

Alice opened Chez Panisse in 1971, serving a single fixed-price menu that changes daily. The set menu format remains at the heart of Alice's philosophy of serving only the highest quality products, only when they are in season.

Over the course of three decades, Chez Panisse has developed a network of mostly local farmers and ranchers whose dedication to sustainable agriculture assures Chez Panisse a steady supply of pure and fresh ingredients.

Alice is a strong advocate for farmer's markets and for sound and sustainable agriculture. In 1996, in celebration of the restaurant's twenty-fifth anniversary, she created the Chez Panisse Foundation to help underwrite cultural and educational programs such as the one at the Edible Schoolyard that demonstrate the transformative power of growing, cooking, and sharing food.

Among Alice's many board affiliations, she is an International Governor of Slow Food, a Visiting Dean at the French Culinary Institute, an Honorary Trustee of the American Centre for Food, Wine and the Arts in Napa, and Board Member of the San Francisco Ferry Plaza Farmers Market.

Alice is author and co-author of eight books. She was named Best Chef in America by the James Beard Foundation in 1992 and Cuisine et Vins de France listed her as one of the ten best chefs in the world in 1986.
Barossa Valley

- **Maggie Beer - A Barossa Food Tradition**
- So many ideas and new products I can't wait to bring to you - chocolates, salad dressings, mustards, tapenades. I'm also in the throws of rewriting both Maggie's Farm and Maggie's Orchard and merging them as one. Maggie's Farm Orchard will be published by Penguin and available mid year.
- All of my new products and will be available via the website so make sure you visit us often to find out all the latest news.
- So lots to keep me busy and I will look forward to penning all my travel news on my return.
- Maggie
Daylesford, a top organic farm shop

- Organic restaurant of the year - Daylesford Organic Farmshop in Daylesford, Gloucestershire.
- The judges commended the use of “First class, seasonal ingredients” and “varied, well-prepared dishes”
- ‘….on to the enticing display of fruit and veg, where I buy a few heads of crisp purple broccoli, tiny Italian vine tomatoes, a stick of lemongrass and a knob of ginger….. organic Monmouth coffee to finish’
Regional & Local Constructed Advantage: Preseli

• What are our knowledge advantages?
  High quality agriculture & landscape
  Diverse tourism offer
  Maritime resources

• What to innovate?
  Branding organic and other food in demand
  Growing and creating biofuels
  Gastronomy, art/cultural economy
  Fisheries, port logistics, maritime bioresearch
  Construction talent
  Connectivity in Wales & to global knowledge centres
Creativity

• Preseli a mecca for quality art, design, fabrics, food etc. (Melin Tregwynt model)
• A proper Preseli gallery (Sutherland etc.) and more gallery shops (compare Cornwall)
• Gastronomy and local ‘farm to fork’ training
• Specialise in attracting and training artistic talent, also architectural heritage/rescue skills
• Quality craft training, producing & marketing (compare Ireland)
• Develop an ‘innovation system’ for creative industries (‘related variety’) with global connectivity
Rural Arts

introduction to the cow shed

tristan's gallery

what's on photographs

Man Ray

Wadebridge

Rhiannon

Coombe Farm Gallery
Usk Valley: near Cardiff

- 20 Gastropubs
- 35 Organic Farms
  - 13 Beef
  - 12 Lamb
  - 10 Horticulture
- 22 Vineyards
- 8 Art Galleries
- 1 National Park
- 10 Farmer’s Markets
- Abergavenny Food Festival. 30,000 visitors
- Tretower – Film Location
- Ryder Cup 2010
Conclusions

• Future, a Knowledge Economy: Norway well-placed
• Key roles for Innovation & Creativity
• Creative Class attracts economic growth
• RIS plus creativity, talent & entrepreneurship
• Post-sector, post-cluster? Platforms & IPPs
• Innovative Platform Cases
• Related Variety/Absorptive Capacity > Creative Region