

Measuring Creativity: Bridging the Psychology and Economic Perspectives

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Goals of this presentation:

- To Highlight the weaknesses of the current measuring approaches to innovation
- To propose a complimentary, bottom-up approach for innovation scorecards based on the conceptual frameworks used in psychometric tests for creativity

European
Innovation Scoreboard
2016

1.1.1 New doctorate graduates (ISCED 8) per 1000 population aged 25-34

1.1.2 Percentage population aged 30-34 having completed tertiary education

1.1.3 Percentage youth aged 20-24 having attained at least upper secondary education

1.2.1 International scientific co-publications per million population

1.2.2 Scientific publications among the top-10% most cited publications worldwide as % of total scientific publications of the country

1.2.3 Non-EU doctorate students as a % of all doctorate students

1.3.1 R&D expenditure in the public sector (% of GDP)

1.3.2 Venture capital (% of GDP)

2.1.1 R&D expenditure in the business sector (% of GDP)

2.1.2 Non-R&D innovation expenditures (% of turnover)

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Innovation indices: the need for positioning them where they properly belong

Jan Kozłowski¹ 

- Regarded as the model of objectivity, statistics is based on subjective assumptions.
- Statistics are not amassed, but generated;
- its results are not laws or findings, but products.

- Over the years, indicators were differentiated in terms of forms (structural, input, process, output, outcome, impact) and applications (budget; control; evaluation; implementation; management; milestone; monitoring; policy; planning; programme; project; resource efficiency; roadmap; strategy...).

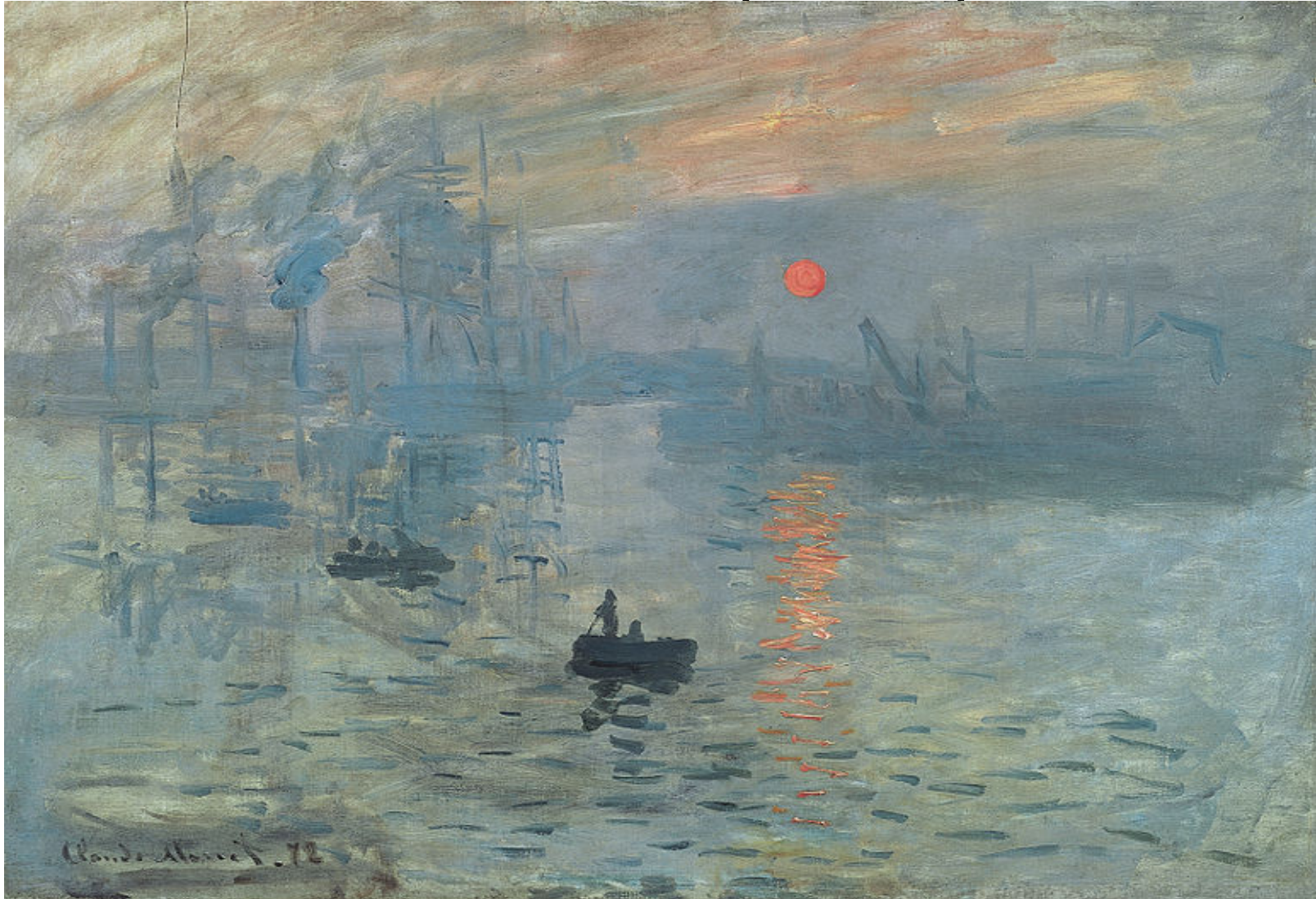
- Research studies on which innovation policies are based are considered to be too macro and not detailed enough to address the needs of specific regions or sectors (Godin 2013).

- Experience shows that innovation can be very context and culture-dependent

- In the Paris of the 1860's the *Académie des Beaux-Arts* had an almost all-encompassing power over the happenings of the era and their annual art show,
- the *Salon de Paris*, was the event where the golden standard of the day was decided.
- The objective of the *Académie* was to preserve the traditions of French painting standards, and anything that fell out of the norm was doomed to the peripheries of existence.



Claude Monet – Impression, Soleil Levant (1872)



Edouard Manet – Olympia (1865)



A new measurement approach for innovation

- What is a country (region) was person?
- What if creativity tests and research agendas were adopted for the purpose of measuring of macroeconomic processes? (as a complementary approach to ,innovation scorecards' as we know them)?

cre·a·tiv·i·ty

[kree-ey-tiv-i-tee, kree-uh-]

–noun

1. the state or quality of being creative.
2. the ability to transcend traditional ideas, rules, patterns, relationships, or the like, and to create meaningful new ideas, forms, methods, interpretations, etc.; originality, progressiveness, or imagination: the need for creativity in modern industry; creativity in the performing arts.
3. the process by which one utilizes creative ability: Extensive reading stimulated his creativity.

[Origin: 1870–75; creative + -ity]

Arguments opposing the creativity tests

1. Predictive Validity
2. Content Validity
3. Divergent Thinking
4. Fluctuations in Creative Production

1. Predictive Validity (1)

- A number of researchers have questioned the ability of creativity tests to accurately predict future accomplishments.
- In an overview of numerous creativity tests and checklists, Cropley (2000) reported relatively low predictive validity (coefficients around .50) and suggested this might be because the test tasks do not resemble real-life creative behavior.
- **The greater the conceptual distance between the test and the performance to be predicted, the less reason there is to believe that the test will tell you what you really want to know.**

1. Predictive Validity (2)

- Csikszentmihalyi (1988, 1999), in his longitudinal study of art students, noted that some of the most potentially creative people ended up pursuing ordinary occupations whereas others, who demonstrated no outstanding potential, persevered and produced major creative achievements.
- Feist (2004) similarly argued that **early childhood talent is by no means a sufficient condition or predictor of adult creative achievement.**
- Even Torrance (1995) noted that there were students who had scored only moderately on his tests but had made substantial creative achievements in scientific fields.

2. Content Validity (1)

- Some argue for a domain-general characteristic, others believe creativity to be domain relevant and possibly even task specific within a domain.
- Even in very young children, creative performance in one domain was quite independent of creative performance in another, and in some instances, there was even a negative relationship.

2. Content Validity (2)

Perhaps there are some characteristics of the creative personality (e.g., being inquisitive, unconventional, and willing to take risks) and cognitive processes (e.g., seeing gaps in the existing knowledge and problem finding) that are found across domains, but each domain has its own unique set of skills and rules of accomplishment.

No single instrument or analytical procedure can capture the complex and multidimensional nature of creativity effectively and comprehensively.

Personality characteristics associated with creative people (1)

- Self-discipline and independence;
- Perseverance, drive and commitment;
- Tolerance of uncertainty;
- Nonconformity to the stereotypes of society;
- Deferred gratification;
- Self-motivation;
- Willingness to take risk;
- Broad interest;
- Curiosity and openness to experience;
- The value of originality.

Creativity criterion	Ability	How it is scored
Fluency	Produce a large number of ideas in words, figural images or actions	Total number of relevant responses
Flexibility	Produce a variety of kinds of ideas, draw in relevant ideas from a variety of domains, shift between domains easily	Number of different categories of relevant responses
Originality	Produce ideas that are less obvious or expected but that are uncommon or unique	The frequency of the responses
Elaboration	Develop, embellish or elaborate ideas	Amount of detail in the responses
Abstractness	Sense the essence of a problem or an issue, its level of abstraction	Level of abstraction
Resistance to premature closure	Keep an open mind, unanswered questions, unresolved issues and to work on information from a variety of perspectives	Total number of unanswered questions, unresolved issues

Measurement vs. Assessment

It is helpful to understand the differences between measurement and assessment.

Measurement is defined as any instrument or testing procedure through which quantitative data can be obtained and analyzed statistically (Treffinger, Young, Selby, & Shepardson, 2002).

Assessment is a matter of “taking stock” or gathering information from a number of sources (which may include measurement instruments) and synthesizing it in a meaningful way.

Core dispositions of the creative mind

- Inquisitive
- Persistent
- Imaginative
- Collaborative
- Disciplined

Measurement approaches for creativity assessment

Guilford (1950):

- Fluency – no. of ideas
- Frequency – rate of occurrence of novel, uncommon or original ideas
- Flexibility – ease with which mindset changes (the reverse is rigidity)

What are the Innovation Scroracards blind to?:

- Motivation (intrinsic vs. Extinsic) (Amabile 1983)
- Divergent thinking– do we need clusters (convergent thinking) or creative industries (divergent thinking)?
- Age structure of the society – Reese et al.. (2001) revealed a relationship between age and divergent thinking (peak at age 45)
- Environment – level of formalization; 10 features of progressive cultures , (in: *Culture Matters: How Values Shape Human Progress* by L.E. Harrison, S.P. Huntington)

A new innovation scorecard framework (examples of indices):

- Motivation indices
- Convergent thinking indices
- Curiosity indices
- Deferred gratification indices
- Future-orientation indices

Summary

- The current Innovation indices and approaches have many weaknesses
- Their design may motivate countries to overlook their strengths and weaknesses
- Innovation can be very context and culture-dependent
- According to Godin, the original sin committed in the literature on innovations, which was transferred to indices and leads to them being devalued, came from their view of innovation as a panacea for all evils.

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