The Transform-o-meter

A method to forecast the transformative impact of innovation

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Abstract

An achievement-driven methodology strives to give students more control over their learning with enough flexibility to engage them in deeper learning. (more stuff continues)

Contents

1 - Introduction

This paper aims to describe a methodology for forecasting the transformative potential of a piece of innovation.

This paper proceeds as follows. In Section 2, the need for this kind of forecasting methodology is described and the state of current research on the matter is examined. In Section 3, the criteria behind the Transform-o-meter is explained. In Section 4, Transform-o-meter scores for SOME NUMBER of innovations in the history of humankind are introduced. Section 5 then introduces a machine learning model developed to apply the criteria to a text description of an innovation. Section 6 concludes.

2 - The Need to Forecast Transformative Potential

3 - The Transform-o-meter Methodology

3.1 - Defining What to Forecast

The goal of the Transform-o-meter is for it to be able to evaluate the transformative potential and impact of both material and immaterial inventions/innovations/ideas. Therefore, for the sake of simplicity, we introduce the concept of an **Innovation Unit** (or **IU**). The Transform-o-meter's criteria's goal is to be applicable to all IUs. Thus, we shall now formalize the definition of an IU.

3.1.1 - Definition of an Innovation Unit (IU)

> An **Innovation Unit** is a specific, named, artificial invention, development, discovery, and/or idea.

3.2 - The Criteria Behind the Transform-o-meter

The Transform-o-meter evaluates an IU through six parameters. These parameters where chosen to be applicable to all IUs, past, present and future.

The parameters act like a rubric. The IU in question is given an integer score from 1 to 5 in each of the criterion. This score is then normalized to an integer scale with a maximum score out of 100.

The criteria are as follows:

- **Super-seedness Protection**
- **Magnitude of Economic Impact**
- **Centralization**
- **Immediacy of impact**

- **Uniqueness**
- **Counter-factual impact**[1]

The following sub-section explains each of the criterion, as well as the reasoning behind each of the possible scores.

3.2.1- Examining the parameters

3.2.1.1 - Super-seedness Protecion Evaluates if this IU been, in it's purest form, has super-seeded by another IU for the purpose it was originally intended for; and if other IUs can be used for the exact same purpose.

3.2.1.1.1 - Scoring

- **1** - The IU has been completely replaced by other, completely different, IU; it is useless.
- **2** - The IU has been mostly replaced by other IUs that take inspiration from the original one.
- **3** - The IU is used for its original purpose in mostly equal conjunction with other, later/contemporary IUs.
- **4** - The IU is, currently, the most dominant tool used for the purpose it was created for, altough other IUs exist that do the same thing but are not as dominant and/or severely depend on this particular IU.
- **5** - The IU is, currently, the most dominant and efficient tool used for the purpose it was originally created for. No other known IU can compare.

3.2.1.2 - Magnitude of Economic Impact Evaluates how significant were the changes in humanity's economic activities as a consequence of the development of the IU.

3.2.1.2.1 - Scoring

- **1** - The IU has had minimal economic impact.
- **2** - The economic impact of the IU is significant, but limited to a specific area of expertise/research.
- **3** - The economic impact of the IU is significant and wide-reaching across several areas of expertise.
- **4** - The IU managed to alter the way at least a generation has engaged in economic activities.
- **5** - The IU fundamentally changed the way humanity engages in economic activities.

3.2.1.3 - Centralization Measures how centralized was the development of the IU.

[1] Special thanks to Christoph Winter.

3.2.1.3.1 - Scoring

- **1** - The IU was created by several civilizations/societies over an either unspecified, or centuries-long time period.
- **2** - The IU was created as a decentralized effort by an entire civilization in a period no longer than a century.
- **3** - The IU was created as an uncoordinated effort of different people/groups of people over the span of several decades.
- **4** - The IU was created as a coordinated effort of different people/groups of people over the span of several decades.
- **5** - The IU was created as a coordinated effort of a singular person/group of people over a period no longer than a decade.

3.2.1.4 - Immediacy of impact Evaluates the time taken for the full-impact of the IU to materialize.

3.2.1.4.1 - Scoring

- **1** - The full impact of the IU was not felt until centuries after its invention.
- **2** - The full impact of the IU was not felt until no more than a century after its invention.
- **3** - The full impact of the IU was not felt until no more than half a century after its invention.
- **4** - The full impact of the IU was not felt until no more than less than quarter of a century after its invention.
- **5** - The full impact of the IU was not felt until no more than a decade after its invention.

3.2.1.5 - Uniqueness Measures how unique/novel the UI is compared to both prior IUs and contemporary (at the time) IUs.

3.2.1.5.1 - Scoring

- **1** - Not novel at all; similar IUs were developed more than a century before this one.
- **2** - Not very novel; similar IUs were developed less than a century before this one.
- **3** - Contemporarily novel; similar IUs were around the same time as this one.
- **4** - Novel; the IU shares minimal, but noticeable similarity to other contemporary IUs.
- **5** - Top of the line; the IU shares little to no similarity to other contemporary and previous IUs.

3.2.1.6 - Counter-factual impact Measures the likelihood in which the IU could be developed by contemporaries.

3.2.1.6.1 - Scoring

- **1** - Other, independent, unrelated peoples developed virtually the same IU at around the same time.
- **2** - Someone working on the same circle developed virtually the same IU at around the same time.
- **3** - If someone else had the same material resources as the innovator, it is very probable that it could've invented it.
- **4** - If someone else had the same material resources as the innovator, it is very unlikely that it could've invented it.
- **5** - If someone else had the same material resources as the innovator, it is impossible that it could've invented it.

4 - Transform-o-meter scores for some innovations

5 - The Transform-o-meter as an AI

6 - Conclusion

References