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# Internet Discussion Forums: Maximizing Choice in Health-seeking Behaviour During Public Health Emergencies

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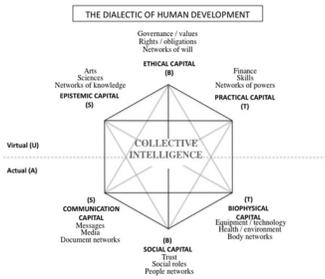
## **Abstract**

This paper introduces a new approach for assessing how the technology affordances of internet discussion forums may influence health-seeking behaviour. The approach combines theories from computer science, behavioural science and development studies to explore the potential benefits of group decision making and problem solving in online environments and relates these to Computer Science theories of Collective Intelligence developed in particular by Pierre Levy. The approach seeks to test whether internet discussion forums are able to provide the 'clever mechanism' considered necessary to harness the Wisdom of Crowds when the optimal decision making processes are constrained. This will be cross-referenced against Amartya Sen's Maximization and the Act of Choice to show how discussion forums' technology affordances may add value to the choices available in sub-optimal conditions, suggesting a public health emergency as a possible case-study.

## **Author Keywords**

Collective intelligence; crowd sourcing; choice; technology affordances; internet discussion forums.

## Collective Intelligence



**FIG I:** A Model of Collective Intelligence in the Service of Human Development (Pierre Lévy, in *The Semantic Sphere*, 2011)

S = sign, B = being, T = thing

## ACM Classification Keywords

Human Factors, Reliability, Theory

## Introduction

This paper introduces a theoretical approach for considering how the technology affordances of internet discussion forums may benefit or hinder health-information seeking online. Online health discussion forums can offer online interaction with a qualified healthcare professional who may be geographically distanced but who can be communicated with remotely rather than in person, and/or online interaction with non-medically qualified but experienced individuals, such as others who have experienced the same health condition, who may be able to offer advice. The technology affordances of such online discussion forums may help or hinder their suitability for sourcing health information compared with other internet-based options, and for providing a maximized choice (Sen 1997) of health options available. Understanding the way in which health discussion forums enable or prevent the emergence of accuracy will help us to understand what value if any such platforms might provide, particularly under challenging circumstances.

## Scaling down from the best options

During a public health emergency, healthcare resources normally available to individuals may be limited or unavailable, fitting fit the criteria of a State of Exception (Agamben, 2005) under which 'exceptional' methods of healthcare provision may need to be brought into play. If access to less than the ideal healthcare provision is unavailable - the 'maximal' rather than 'optimal' choice (Sen, 1997) - may become the best or only option available. Seeking information

from the multiple alternate sources provided by many posters on an internet health discussion forum, rather than from a single source, may be more likely to elicit a reliable and accurate response.

In 2005, James Surowiecki observed and recorded in his book *The Wisdom of Crowds* that a group of individuals was able to find solutions to problems of a sometimes very sophisticated nature. In the right circumstances, a group can be "smarter than its smartest member", echoing findings first made nearly a century earlier (Galton, 1907). Surowiecki suggested that advantages of crowd wisdom include cognition ('market judgement'); coordination (influenced by the common understanding of the group); and cooperation. However, a number of conditions need to be in place:

- Each individual member of the 'crowd' must have their own independent source of information
- They must make individual decisions and not be swayed by the crowd around them
- There must be a mechanism in place to collate these diverse opinions

Criticisms of the theory (acknowledged by Surowiecki himself), argue that when interaction takes place, the individual answers may be biased by social processes, lowering the overall intelligence of the group (Lorenz, 2011). Shurmaan et al (2012) suggest that while the theory is applicable to objective, measurable information – such as guessing the weight of an object that has a measurable weight – it is less appropriate for innovation and ideas, though social interaction can enable individual knowledge to be 'shared, corrected, opened, processed, enriched and evaluated'.

Can the technology affordances of internet health discussion forums create what Surowiecki described as 'a clever mechanism' to turn individual ideas into a collective decision, enabling accurate health information to emerge from the 'crowd' of discussion forum users?

### **Collective intelligence**

Pierre Levy's Theory of Collective Intelligence (Levy 1994, 1997, 2010) discusses the potential benefits of a unified human consciousness enabled by computer networks. Levy proposed 'knowledge space' as an anthropological domain – the Knowledge Space – in which the movement of knowledge defines the further development of the human race. He proposes that "communications technologies will serve to filter and help us to navigate knowledge, and enable us to think collectively rather than simply haul masses of information around with us". The internet and related media create a new space of collaboratively produced, dynamic, quantitative knowledge (Alvaro, 2014). The users of the technology must act and think collectively, however: simply inhabiting the same cyberspace without this collaboration is not enough. We need Surowiecki's 'clever mechanism' for it to become collective intelligence rather than shared information. Bonabeau (2009) sees the collective intelligence of the internet as enabling two key functions: [1] Generation of potential solutions and [2] Evaluation of potential solutions. It provides us with the ability to make decisions not only individually, but also collectively, which he called 'Decisions 2.0'. What we need is a framework to understand the conditions [such as 'Business as Usual, or 'State of Exception'?] under which such decision-making is possible (or not), desirable (or not) and affordable (or not). The characteristics of internet discussion forums make

health discussions possible; generate potential solutions; and enable those potential solutions to be evaluated, but we need to better understand whether the characteristics of the information provided mean that such decisions are desirable (due to their likely accuracy) and affordable (dependent on the benefits and/or harm that may come from making them).

### **Maximization and the Act of Choice**

In his 1997 paper 'Maximization and the Act of Choice', Amartya Sen explored decision inescapability, in which a decision has to be made even when the conditions under which the ideal (or optimal) decision can be made have not been met. He suggests that where no optimal choice is available but a choice still has to be taken, the 'maximal' alternative becomes the best option. It then becomes important to understand which choice, out of, for example, 'Googling my symptoms' or 'Asking a question on an internet health discussion forum' is most likely to be the maximized choice. Kleine (2010) has linked Sen's work to ICT, showing how it can enable easier communication, improve personal and professional contacts, increase knowledge and save time. Kleine also recognizes the value of the group within the social resource, using a definition from Bordieau (1986) of a group as 'a durable network [...] which provides each of its members with the backing of the collectively-owned capital'.

### **Conclusions**

I propose that studying the theory of Collective Intelligence and the Wisdom of Crowds within the context of internet discussion forums is particularly valuable with regard to how this may enable a rapid respond during public health emergencies, especially those initiated by a novel disease about which little is

known and there is little real expertise available. The technology affordances of discussion forums may help us to understand how the 'Collective Intelligence' of the internet may play a role in harnessing the Wisdom of Crowds. A greater understanding of how online health discussion forums are influenced by their technology affordances may help us to determine whether their characteristics are able to add value and in turn determine the extent to which the technology is not just valuable but also likely to be valued.

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