
IDEAL ORGANIZATIONAL THEORY 2.0

Jason L. Lind, USAF (Sep.)

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Ideal organization theory formulates a methodology for not only what it takes to create artificial intelligence but also what that concept really means. The answers are very surprising: according to this thesis artificial intelligence simply emerges from highly optimized structure.

THESIS

In the unwavering and literal terms of set theory, economic theory and information theory; for all sets, under all conditions where the players have self-determination the author poses:

Artificial Intelligence = Finite interaction is optimized through oligopical competition, whereas non-finite processes are optimized by the free marketplace. Formal organizational group structure therefore must be oligopical, but their interaction must be free. The individual is a monopoly. Q.E.D.

ARTIFICIAL INTELLIGENCE

"A computer would deserve to be called intelligent if it could deceive a human into believing it was human"

- Alan Turing, Founder, Computer Science

What is Artificial Intelligence? This question has transcended human history as it really posits: "how does one create intelligence." Modern computer science / philosophy contends that the next "singularity" will indeed be a computer system(s) achieving intelligence – eventually that greater of the sum collection of humanity.

But what-if super intelligence can naturally rise from carefully and highly organized structure? The Q.E.D. at the end of the "equation" remains controversial, however the author contends that with an understanding off these terms at their deepest meaning it is clear that this proposition is indeed true – that the greatest intelligence is humans and computers competing together in harmony.

EQUATION

“No matter how correct a mathematical theorem may appear to be, one ought to never be satisfied that there was not something imperfect about it until it also gives the impression of being beautiful”

- George Boole, Founder, Boolean Logic

While the thesis is in words and not symbols it is none the less a Boolean equation, and therefore mathematical. It is the author's contention that the left hand side naturally equates to the right – that is with a deep and broad understanding of the terms and how they interact directly results a “true” statement – and someone with even a cursory knowledge of *all* these terms should find this statement so obvious that no further proof is actually necessary. The proceeding pages will further define the variables primarily by plugging in relevant quotes by the giants in their fields.

Elegance is a concept universally appreciated yet seen as much more art than science, when in fact the achievement of true elegance takes a very scientific understanding of the presentation medium. Beauty and elegance are complementary and the author contends that his thesis is akin to a living organism – that simply jumps off the page.

INTERACTION

*“All the world's a stage,
And all the men and women merely players;
They have their exits and their entrances,
And one man in his time plays many parts,
His acts being seven ages”*

- William Shakespeare

Players that have self-determination have at least some choice in the roles they play in that while one cannot directly be force to act against their utility – they can be manipulated into doing so. Ideal Organizational Theory takes this a step further and proposes a marketplace structure where that kind of manipulation is reduced to near-zero occurrence.

“For a good book has this quality, that it is not merely a petrification of its author, but that once it has been tossed behind, like Deucalion's little stone, it acquires a separate and vivid life of its own”

- Johann Peter Gustav Lejeune Dirichlet, Founder, Dirichlet Distribution Functions

Mathematically players' presence will transcend time and space – their exits from each stage is not the end of their influence in that space; their memory leaving a lasting legacy.

FINITE VERSUS NON-FINITE

“The fear of infinity is a form of myopia that destroys the possibility of seeing the actual infinite, even though in its highest form has created and sustains us, and in its secondary transfinite forms occurs all around us and even inhabits our minds”

- Georg Cantor, Founder, Set Theory

The thesis notes that there are two types of marketplaces, one with finite interaction and one with non-finite processes. While a poor definition of finite would be “bounded or limited in magnitude or spatial or temporal extent” the mathematical definition the author uses is closer to “an amount fully comprehensible by a player.” Marketplaces with limited players can be formalized but more often than not are informal – as formalization in non-finite marketplaces exist to deal with that the amount of players and moves, both potential and realized, are impossible for any one player to comprehend within that dynamic.

Collaboration is only possible in a finite marketplace thus, as proposed in “A System for Goal Oriented Governance” [Lind 2009], informal organizations that formalize whilst remaining finite have a significant competitive advantage over those that do, or can, not.

$$\varpi := \text{player}, \psi_{\varpi}(e) := \text{comprehension fn, Finite} | A_{\varpi} := O\left(\bigcup_{a \in A} \psi_{\varpi}(a) d\varpi\right) < O(A)$$

In Lindian Differential Set Notation (“A Treatise on Reality” [Lind 2020]) an arbitrary set is defined as having finiteness for a given player if the union of all of a set’s elements into the comprehension function with respect to the player has a computational complexity less than that of the original set. At first glance this may appear to be a problematic definition of finiteness as a very complex set could possibly only have a slightly less complex comprehension, however for our purposes if the “comprehension” of a set by a player is less than that of the set itself it would imply the player would be able to digest that set – the complexity itself means nothing without comparison.

OPTIMIZATION

“The final test of a theory is its capacity to solve the problems which originated it”

- George Danzig, Founder, Linear Programming

Leveraging the duality of market forces – oligopoly for finite interaction and non-finite processes leveraging the free marketplace – provides eventual optimization of the system in general.

OLIGIPICAL

“For mixed strategies, which are probability distributions over the pure strategies, the pay-off functions are the expectations of players, thus becoming polylinear forms in the probabilities with which the various players play their various pure strategies”

- John Forbes Nash, Jr., Founder, Modern Game Theory

It is simply reality that a fixed set of players will use their understanding of each other to alter the dynamics of the very game they are playing. While the term oligopoly obviously has negative connotations since it is traditionally used to refer to a small group of players on the supply side that can affect pricing through collusion with the other suppliers, however have the demand side is finite as well this collusion becomes collaboration.

$$\mu := \text{move}, \gamma_i := \text{game of } i, \text{Oligipical} | \gamma_i := O \left(\bigcup_{\psi_{\omega} \in \gamma_i} \psi_{\omega}(i) d\gamma_i \right) \leq O \left(\bigcap_{\mu \in \gamma_i} d\gamma_i \right)$$

In addition to being finite to be oligopical the comprehensive complexity of the game itself must be less than or equal to that of the complexity of the intersection of the moves by game of i.

“Prisoner of War guard companies, or an equivalent organization, should be as far forward as possible in action to take over prisoners of war, because troops heated with battle are not safe custodians. Any attempt to rob or loot prisoners of war by escorts must be strictly dealt with”

- General George S. Patton, USA

It seems obvious potentially more positive than negative consequences of oligopical markets.

COMPETITION

“... the effort of two or more parties acting independently to secure the business of a third party by offering them most favorable terms”

- Adam Smith, Wealth of Nations

Competition is another word with negative connotations, when really it is just referring to multi-party bargaining. The negativity tends to revolve around information deception where parties are untruthful about their true motivations – or even worse capabilities.

In a formalized organization finite size these issues tend not to exist – otherwise the organization would disintegrate. A free marketplace also has no room for this kind of disinformation as the contracts being exchanged are commoditized so that the buyer and seller do not directly interact.

Clearly both of these market structures exist in nature, but so do others that are less desirable thus this is a failure of structure of the system and not of nature.

PROCESS

“... a set of linked activities that take an input and transform it to create an output. Ideally, the transformation that occurs in the process should add value to the input and create an output that is more useful and effective to the recipient either upstream or downstream”

Henry J. Johansson et al, Business Process Reengineering

Business processes used by automated marketplace, which certainly do streamline objectives, do not allow for collaboration due to the non-finite nature of the players and activities involved. Even a simple activity from the perspective of a deterministic actor is lively extremely complex and touches unknown players.

This type of automation often leads to market failure, the greatest of which is speculation. By abstracting the information the extent needed for automation in today's system the madness of crowds takes over and people tend to chase castles in the sky, as Burton Malkiel put it.

STRUCTURE

“A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of the bees is this, that the architect raises his structure in imagination before he erects it in reality”

- Karl Marx, Founder, Soviet Union

The hierarchy of an organization may look great in theory, but also match reality. Idealism is dangerous since changing the nature of players, which not impossible, is a very costly operation that is generally not sustainable.

“... a group is an algebraic structure consisting of a set together with an operation that combines any two of its elements to form a third element”

- Wikipedia

Ideal Organizational Theory contends that through this organization structure people will behave the way they always have but their behavior be optimized and collectively more intelligent.

“Any effectively generated theory capable of expressing elementary arithmetic cannot be both consistent and complete. In particular, for any consistent, effectively generated formal theory that proves certain basic arithmetic truths, there is an arithmetical statement that is true, but not provable in the theory”

- Kurt Gödel, On formally undecidable positions of Principia Mathematica and related systems

When dealing with complex problems it is impossible to prove to all players which direction is correct, even when the concertive utility of a move may be obviously maximized for all according to one perspective. Players can often only agree to the process for making decisions and not the decisions themselves. Formal organizational structure therefore should not go beyond what is agreeable to the players involved.

FREEDOM

"In a capitalist society, all human relationships are voluntary. Men are free to cooperate or not, to deal with one another or not, as their own individual judgements, convictions and interests dictate"

- Ayn Rand, Author

"Subjects who have discontent, for any reason, cannot be expected to act in the best interests of the organization. In order for a subject to be truly effective they must understand the goals of the organization and decide to join of their own free will"

-Jason L. Lind, "A System for Goal Oriented Government"

Whilst free marketplaces enable all transactions it is actually oligopolical marketplaces that allow subjects to join onto organizations that they believe in. Unfortunately in today's economy subjects are forced into undesirable business relationships by market forces such as lack of opportunity. Ironically this is a result of players' true preferences not being recognized by the marketplace's highest levels of abstraction.

"All, too, will bear in mind this sacred principle, that though the will of the majority is in all cases to prevail, that will to be rightful must be reasonable; that the minority possesses their equal rights, which equal law must protect, and to violate would be oppression"

- Thomas Jefferson, Founder, United States of America

"All human situations have their inconveniences. We feel those of the present but neither see nor feel those of the future; and hence we often make troublesome changes without amendment, and frequently for the worse."

- Benjamin Franklin, Founder, United States of America

Free interaction must be moderated by rights and law which protect the minority from the majority. These must be as limited in nature as possible and only change under extraordinary circumstances.

"Even the striving for equality by means of a directed economy can result only in an officially enforced inequality – an authoritarian determination of the status of each individual in the new hierarchical order"

- Friedrich von Hayek, Founder, Austrian Economics

The players and sets of players cannot be directed centrally: only through self-organization will the system be fully optimal. The marketplace, at both the finite and non-finite levels, must allow these to happen without impedance.

Q.E.D.

"Be not astonished at new ideas; for it is well known to you that a thing does not therefore cease to be true because it is not accepted by many"

- Baruch Spinoza, Author of "Ethics"

There are three types of marketplace dynamics in nature: monopoly, oligopoly and the free marketplace. These all have a role to play when developing a marketplace free of failure. Sets of players organize themselves in an oligopolical form, where they can collaborate. Individual players are by definition monopolies and their interaction must be free in a free marketplace.

With this kind of organization the marketplace itself will behave as if it was intelligent – and in fact becomes intelligent: that highly optimized structures according to the thesis simply give rise to intelligence greater than the sum of its parts when non-optimized structures often result in the opposite.

"And thus it's proved"

Latin translation of: quod erat demonstrandum

REFLECTION

"Further, the dignity of science itself seems to require that every possible means be explored for the solution of a problem so elegant and so celebrated"

- Carl Fredrich Gauss, Mathematics Prodigy

When I first wrote IOT in 2010 I promoted it as a solution to $P=NP$ which did not go over well. This paper has found greater acceptance as a pure philosophy paper and while I have let the marketplace promote it as such I quietly have maintained a deep connection to $P=NP$.

The Polynomial Time versus Non-Polynomial Time problem discusses the relationship between mathematical problems that are hard to prove to be easy to solve and problems that are hard to solve but easy to prove – and if the sets of these problems are non-equal then some problems that have known algorithms that are easy to solve (P-Complete) can never have algorithms providing easy proof, and conversely some problems that are easy to prove (NP-Complete) can never have an easy solution. Easy in this context means computational complexity – the concept of how many operations it takes to solve/prove a problem.

So how does $P=NP$ extend to intelligence?

"If P were to be NP than anyone who could appreciate a Mozart symphony could compose one"

- Famous MIT Professor

And what this paper explicitly argues is that superior intelligence is manifested from the relatively inferior and that, while people like this MIT professor might find this ridiculous, in the proper structure one can do anything they put their minds to. Therefore this does seem to be proof of $P=NP$ as attacking the consequences of a theorem is a legitimate attack on the theorem itself.