# Simple Systems: A Holistic, Postmodern Alternative to the Oppressive and Outdated Study of Complex Systems

## Semiotics, Transformative Hermeneutics, and Applications

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## ABSTRACT

Much of complex systems research today deals with, understandably, the study of complexity. This is not surprising in itself, since the real world is arguably a complex affair and academics are easily distracted by shiny things, but as theorists from Sartre to Kolmogorov to Jesus have convincingly argued, those who try to understand the essence of complexity using kilogram minds (with apologies to dualists) are doomed to atrophied muscles, bad tempers, and no girlfriends. As an alternative to the masochistic leanings of much of the complex systems community, we propose a postmodern alternative that fully incorporates contemporary social theories of shifting cultural paradigms, ultimately allowing an entirely introspective examination of the universe, namely: *simple systems*. We prove the completeness and consistency of our axiomatic, organic, oak-barrel aged framework, thereby reducing its intrinsic hermeneutics, metaphorically, to little more than a dog chasing its own tail. We also successfully reconcile its epistemic paradoxes with Planck's constant, and then discuss more theoretical issues. It's all pretty deep, man.

## General Terms

Impressionistic mathematics; beer review

## 1. INTRODUCTION

"Math class is tough." – 1992 *Teen Talk Barbie*

It is now indisputable that there exists a universal scale of complexity, intrinsic to the very fabric of our universe, that runs from zero to about seven [2]. Simple things, such as walking, eating, and single-digit addition, score near 0, whereas very complex things, like the Internet, or the reasons for Keanu Reeves' continuing acting career, are situated near the 7-end of the spectrum. The study of complex systems deals with things situated at this so called 'Keanu's end', whereas filing a tax return for the first time would probably only score a feeble 5. Needless to say, complex systems research is clearly a very difficult and possibly pointless endeavor, and yet many promising and otherwise productive young scientists have been lost to this narrow-minded crusade to understand, in one fell swoop, all the things in the world that are too difficult to draw on the back of a cocktail napkin. In response to these criticisms, and as part of a devastating rebuttal to Foucault's seminal monograph on the topic *Les mots et les choses* [3], Bob from next door asked the understated but poignant question: *Why?*

It is this *bon mot* that serves as our foundation for a resolution of the complex systems quagmire. Why, indeed, should we seek half-truths from the science of complexity, especially when it is so hard to understand? Why should we be subservient to our own cognitive ineptitude, propagating, perhaps unconsciously (but perhaps *also* unconsciously), the post-colonial ethos of 'civilized', and therefore *complex*, science? Do we intentionally brand all that we do not understand with the gender-neutral moniker of 'complexity', to be stigmat(a)ized as the holy grail of our intellectual existence, and endowed with an unspoken luster that even today bathes the pages of the best scientific journals with the sweetly rancid musk of tenure? Kurt Gödel would almost certainly have had us think otherwise, as he so subtly and eloquently states in the concluding words[1] of his 1930 treatise *Die Vollständigkeit der Axiome des logischen Funktionenkalküls*: "Wer bist du? Und was willst du?" [5]

Acknowledging that the recent trend in positivist mathematics has been to embrace emotional, holistic, and self-pitying approaches to the understanding of $n$-dimensional functional analysis, especially when $n > 3$, we offer the following resolution for the allure of complex systems and their contradictory intractability: simple systems, or *sistemes simples* in the original Catalan. Stated in the unpleasant jargon of contemporary statistical mechanics, this is roughly equivalent to a conservative axiomatization of *keep it simple stupid*, or the "K.I.S.S" principle. Although the statement is deceptively simple, bordering on the banal, we will show that an axiomatic treatment of the topic, combined with basic metaphysical operators, quite naturally yields an entire class of easily understood algebras, enabling many complex systems researchers, perhaps for the first time, to derive a life out of their work.

## 2. AXIOMS OF SIMPLE SYSTEMS

[1]There is a slight possibility that these words might have been written in his later years, under the soft glow of dementia.

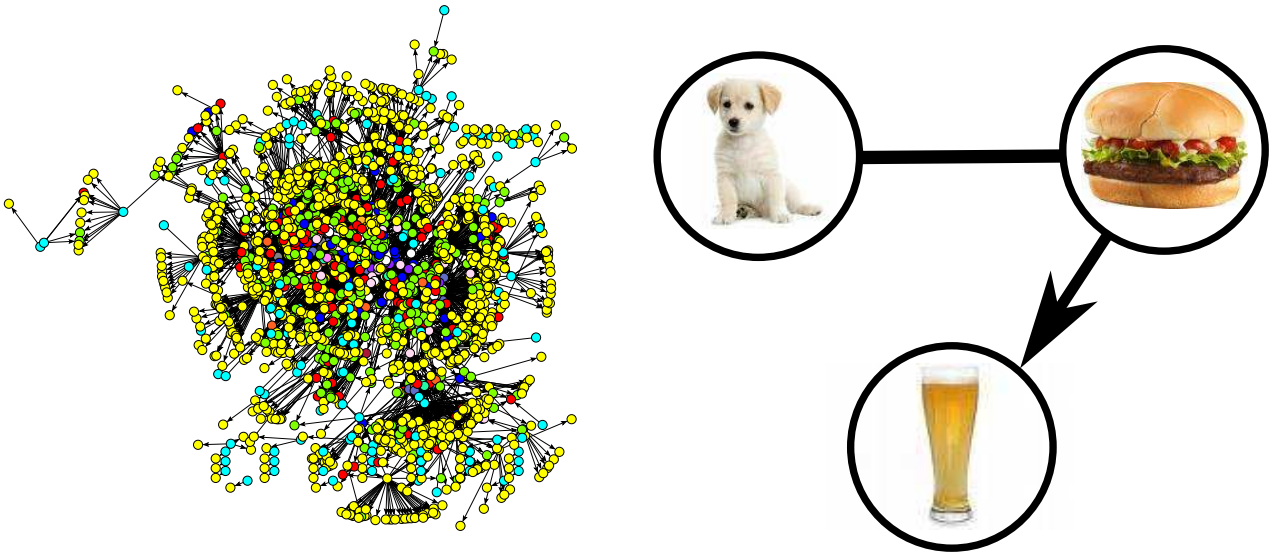

**Figure 1: A complex system (left) and a simple system (right).**

There are two fundamental axioms of simple systems:

**(Axiom of Good)** Simple Good.

**(Axiom of Bad)** Complex Bad.

Let us first consider the many misleading situations that these axioms might suggest. For example, if simple is good, could it be that complex might *also* be good, *i.e.,* are they perhaps mutually compatible in a deeper epistemological sense? To answer this question, we need only turn to our axioms to see that this is indeed one of those misleading intuitions. According to the axiom of bad, Complex is Bad; thus, the answer is no.

## 3. A BRIEF HISTORY OF COMPLEX SYSTEMS RESEARCH

In order to understand simple systems, one must first understand complex systems. Since this is expressly what we have so far tried *not* to do, we should clarify that we would like to understand the *rise* of complex systems research, in order to ensure that there is an eventual *fall*. Based on the premise that complex systems research has manifested itself in ugly and hidden ways throughout history, we do not have to dig too deep to find its masochistic scars ingrained deep in recorded intellectual history. As early as Plato's *Republic*, we find stray elements of the type of rabid intellectual doggedness that ultimately caused the rejection of the simpler pleasures of tilling wheat fields, drinking wine, and generally finding existential solace in carnal curiosities [1].

Although Plato was remarkably prescient for an old crank in heralding the rise of the study of complex systems, a deeper and more thorough analysis of the psychological inadequacies that drive complex systems research had to wait for Sartre's *Esquisse d'une théorie des émotions* [6], in which Sartre convincingly argues that the only plausible reason for people devoting their entire lives to studying squiggly dot-and-line drawings of things nobody else understands, is that they were probably smarter than their fifth grade mathematics teacher, and had to spend a whole lot of time proving it to themselves.

Others, most notably Sigmund Freud in a brief footnote in *Drei Abhandlungen zur Sexualtheorie* [4], contend that the true reasons are, somewhat ironically, simpler than Sartre's highly technical and sometimes impenetrable theories, and probably have a lot to do with trying to impress the pretty mathematics graduate student down the hall. Freud also suggests that the entire endeavor is inherently misguided, because the study of complexity is guided by the physical universe, and mathematicians (even pretty ones) are dreamy creatures who do not care "diddly squat" about the real world [4]. A more fruitful approach would probably be salsa lessons.

By 1967, the entire field of complex systems research was at an impasse. Most developments during this period completely ignored the considerable theoretical contributions of the previous decade, labeling theorems and lemmas a historically oppressive societal construct created by "The Man". Instead, the seminal papers of this misbegotten era drew on a specific branch of *impressionistic mathematics*, and much as Van Gogh changed the face of art in centuries past, so did this new wave of impressionistic mathematics change the style and substance of complex systems research, particularly in the dominance of a style of thought known informally as *gestes de la main*, frequently transliterated as the 'method of hand waving'.

As a result of the emphasis on the emotional instead of substantive aspects of research, a by-product of the *gestes de la main* manifesto, and the fact that the use of big and hard to understand words often lead to tenure, most exchanges at complex systems conferences were ultimately reduced to quibbling over syntax and semantics. This frequently lead

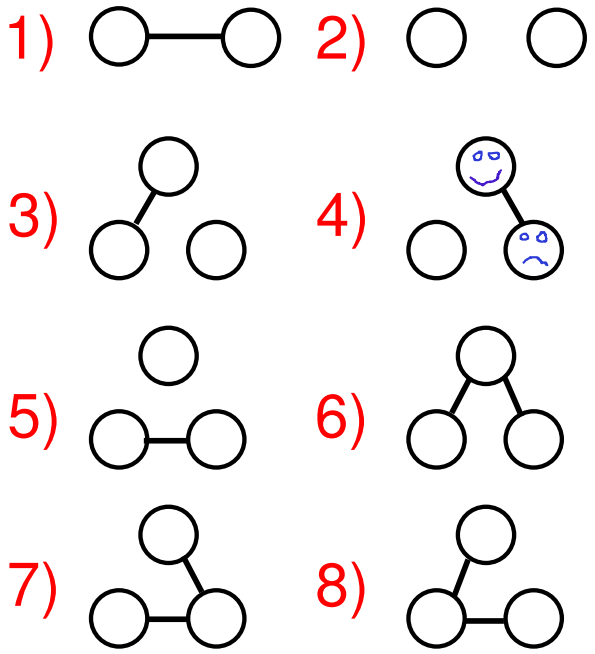


**Figure 2: A comprehensive enumeration of all simple systems. This chart will henceforth be the definitive reference for all simple systems research.**

to the dissolution of entire conferences, caused by keynote speakers being mockingly asked about the complexity of their own mothers, which, if they understood the science of complexity so damn well, they presumably should be able to compute to within a small constant factor[2].

## 4. A LIST OF ALL SIMPLE SYSTEMS

A simple system can be conveniently expressed in graph theoretic notation. This is, in fact, so easy that *all* simple systems in the universe are enumerated in Figure 2. The beauty of our theory is that Figure 2 not only establishes simple systems as a legitimate and extremely important area of intellectual inquiry, but also completes the theory, allowing no further improvements or refinements, and labels the entire research area with a bright red 'done' checkmark. Naturally, the sheer beauty of the structures shown in the figure will not be appreciated instantly by a general audience, so we delve a little deeper in the following (ultimately redundant) exposition for the slower reader.

The more astute simpleton might notice that several of the simple systems in Figure 2 are identical in the traditional sense of identity. This, however, is the essence of the oppressive epistemological hierarchy that has enveloped the complex systems methodology like a drug-addled spider's cocoon. Conventional (oppressive) wisdom would have it that Systems #6 and #7, for example, are identical from a graph theoretic point of view, and thus not worthy of being considered distinct entities.

The source of our hermeneutical outrage is obvious: simple visual inspection confirms that Systems #6 and #7 are undeniably unique, each with a different orientation and equally valid world view. Where the conventional patriarchal graph-theoretic hierarchy sees only three vertices and two edges in both cases, a socially just interpretation *demands* that we see two completely different simple systems, individually beautiful in their choices of angular orientation, edge placement, and Postscript edge smoothing.

It is difficult to even *estimate* how many graphs, in the course of mathematics history, have been oppressively branded with the disparaging 'isomorphic' label, and entirely abandoned in favor of an arbitrarily chosen representative of their artificially imposed class. Are two human beings similarly 'isomorphic' if they both happen to have two arms and a liver, and thus not worthy of differentiation? A full acknowledgement of simple systems is the first step in overcoming this deeply ingrained and viciously Victorian, anti-Feminist, pro-homogenization agenda perpetuated by a dated hierarchy set in place by professional societies of mathematical topologists, which themselves are in their last throes as a result of losing the crucial age 24-30 demographic of graduate students to semi-differentiable manifold reading groups.

## 5. CONCLUSION

We have introduced, perfected, and completed the science of simple systems in this paper, as a viable and rigorous alternative to the tyrannical study of complex systems. As a result, anyone who does not completely and entirely embrace our theories, but rather persists in the study of complex systems, is necessarily a tyrant.

The adroit reader might feel obligated to point out that some simple systems might be missing from Figure 2, that perhaps not all possible simple systems are enumerated in the figure, or that, indeed, there are an infinite number of possible simple systems according to our very own definition, thus making our enumeration non-exhaustive and our exposition here worthless. To this canny sage, we gently point out that their intuition is flawed and their logic severely lacking, their statements are ambiguous and not worthy of publication in such a fine journal, their theorems are trivial in hindsight and possibly plagiarized, and that most self-respecting lecturers would loathe to assign their lemmas as ungraded homework problems for a freshman graph theory course at a fifth-tier university, with former circus chimpanzees of below-average intelligence as students.

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## 6. REFERENCES

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[2] *Your* mother, dear reader, would require a significantly *larger* constant factor.