

What is the first documented use of the term, "Systems Thinking"?

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Abstract: This paper attempts to answer a simple question, "What is the first documented use of the term, 'Systems Thinking'?" Although new historical discoveries can be made, as of this writing, the answer is 1938 in a book entitled, "Interpretations and Misinterpretations of Modern Physics" by Philipp Frank. There are many misconceptions and an abundance of misinformation on Google search of when the term "Systems Thinking" [plural] (or "System Thinking" [singular]) was first used. This paper identifies the first documented use of the term. Note that the first use of the term is not the same as the first discussion of the concepts: systems, systems, sciences, thinking about systems, complexity, etc. In this article, we are simply looking for the first documented use of the specific term, perhaps with the only implication of satisfying the idle curiosities of people interested in the field. We do not engage in opinion, editorial, or discussion about the meaning of these factual and documentable events.

Keywords: Systems Thinking | origin of term | first use of term

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1. First Use of Systems Thinking versus First Thinking About Systems

It should be noted that the "idea" of systems thinking significantly predates the use of the term "systems thinking" by between 60 and 2600 years, depending who you ask. Dr. Derek Cabrera, for example, puts the origins of the idea of systems thinking with Lao Tsu in the Tao te Ching around 2600 years ago (600 years before Christ or before the common era). Cabrera writes:

Significance and Public Understanding: It is important to fact-check entities such as Google, as the answer to any question you ask may not be the correct one. In this case, Google incorrectly attributes the first use of the term "Systems Thinking." Answering and finding the truth of this question can only deepen the field's history and overall understanding of itself.
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The development of knowledge-about-systems began nearly 2,600 years ago with Lao Tsu, who in the Tao Te Ching wrote what is perhaps the first formal description (albeit in verse) of a system when he described the forces of yin and yang. Today, in scientific terms, these naturalistic forces would be described as coupled oscillators. [p.15, (1)]

In this article, we are looking for the first *documentable* use of the term "Systems Thinking," not for the first people who discussed systems concepts or ideas. Identifying and articulating the first documented use of terms provides historical grounding for charting the evolution of terminology, and its role in language and culture. Understanding who first used a term in print or speech, and the context(s) in which the term was used can inform the body of literature and field of practice from the perspective of meaning and application. Yet, the value of discovering the first documented use of the term "Systems Thinking" should not be overstated (especially limited to a Western, English speaking context). The *documentable* origin of the term is certainly not the same as when the concepts originated, nor is it the first time the term itself was used (which may not be knowable because it was likely used in casual conversation before it appeared in print). It is clear, for example, that the 20th Century founders of systems science, cybernetics and complexity (i.e., Bogdonov (2), von Bertalanffy (3), Angyal (4), Weiner (5), Ashby (6), Weaver (7), and Prigogine (8)) were publishing prior to its first use, or at least engaged in deep discussions about systems on or around its first use in 1938. What we attempt to do is simply to identify the first *documentable* case of its use, which likely has little more value than to satisfy the idle curiosities of those interested in the field.

2. The First use of the term "Systems Thinking"

The first verified use of the term "system thinking" (note singular system) in text appears in 1938 in a book entitled, *"Interpretations and Misinterpretations of Modern Physics"* (9) by Philipp Frank.

All expressions like « holism », « wholeness consideration », « system thinking », « gestalt conception », and the like, are altogether ambiguous. They waver between genuine anthropomorphism on the one hand, which is logically comprehensible but primitive, and as the experience of centuries of scientific development teaches, comparatively unfruitful; and broad

and provisional, but nevertheless physical, hypotheses on the other, which may be of scientific value. In the case of the latter it is not, however, conceded that they are quite ordinary physics, because of the desire to satisfy somehow the longing for the return of pre-scientific spiritualism.

For the purpose of seeing the precise quotation in context (especially given its odd use of punctuation such as « holism ») an image of the original is provided in 1.

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Fig. 1. Original excerpt from *Interpretations and Misinterpretations of Modern Physics* (9).

Although the singular form "system thinking" is used, it is clear from the terminology surrounding the text that the concept is the same or similar to the modern-day plural usage "systems thinking."

According to Wikipedia (10),

Philipp Frank was a physicist, mathematician and also a philosopher during the first half of the 20th century. He was a logical-positivist, and a member of the Vienna Circle. He was influenced by Mach and was one of the Machists criticised by Lenin in Materialism and Empirio-criticism.

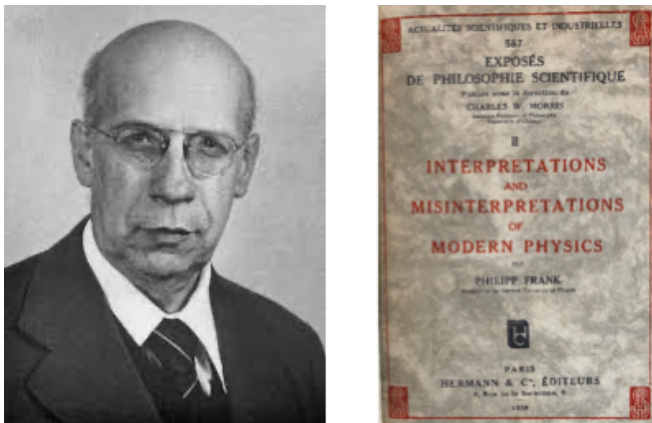


Fig. 2. Phillip Frank and the cover of *Interpretations and Misinterpretations of Modern Physics*

Of course, Frank's palpable negativity toward "expressions like...« system thinking »" (and his identification with logical-positivism) implies that the term was in some degree of common use—at least enough that a physicist of Frank's stature would be pushing back against it. Thus, one can assume that the term was already being used in not-so-obscure circles at

the time of Frank's publication. Prior publications mentioning the term "systems thinking" by name, however, have not yet been discovered.

3. Google Search Results Can Be Misleading

A Google search of "who coined term systems thinking" *highlights* a page that claims that the term was coined by Jay Forrester's group at MIT in 1956 fueling the *common misconception* (11) that System Dynamics is synonymous with Systems Thinking. But there is verifiable textual evidence to the contrary (presented herein). Thus, while the first use of the term "Systems Thinking" can be found using Google search features (such as Google's Book Search* feature among others), the immediate results of a Google search (i.e., the results highlighted at the top of the page) are misleading and an error as is shown in Figure 3.

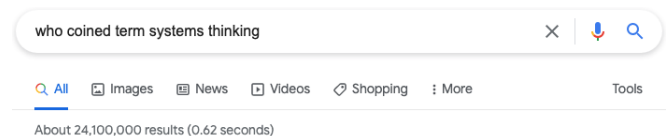


Fig. 3. Immediate search results on Google produce misleading results

While Jay Forrester is a notable figure in the history of Systems Thinking, credited with founding the modern System Dynamics movement, he should not be credited with coining the term "Systems Thinking."

Even using Google Books search feature (rather than simple search) can lead to misleading results, as many entries that include use of the term "Systems Thinking" are dated incorrectly, thus indicating that a book that was published in 1969 was actually published in 1909. For example, Google Books might lull you into believing that the first use of the term "systems thinking " in text occurs in 1909, in *Flight International*, Volume 76 which reads:

It is difficult to know where to begin in discussing the latest Dassault developments, especially because the different Dassault types are closely linked in structural and systems thinking.

However, the text itself is curious. Above this passage it reads:

...1,785 km/hr (1,109 m.p.h.) for the record, although he had apparently taken a wider course in an earlier attempt and averaged 1,274 m.p.h. He had also maintained M2.05 for 4 min.

This same text is shown in Figure 4 in its original form for historical purposes.

*Google Books is a legitimate research source especially for older digitized works. It draws from many libraries around the world and boasts a growing number of items in its catalogue (40M as of 2019) on par with the 3rd-8th largest libraries in the world (56M-42M, respectively) and more than double that of Harvard Library (19M).

1,789 km/hr (1,109 m.p.h.) for the record, although he had apparently taken a wider course in an earlier attempt and averaged nearly 1,274 m.p.h. He had also maintained MZ.05 for 4 min. It is difficult to know where to begin in discussing the latest Dassault developments, especially because the different Dassault types are closely linked in structural and systems thinking. There is a remarkable cross-fertilization of ideas, and even the little Communaute has benefited to a considerable extent from the powered-controls, structural and aerodynamic ideas originally developed for the Mysteres, Mirages and Etendards. The Mirage IV itself is very nearly a structural and aerodynamic extra-

Fig. 4. Flight International use of "systems thinking."

Yet, on May 25th, 1909, Paul Tissandier held the flight speed record of 34.4 m.p.h. (quite a bit less than the 1,109 m.p.h. being cited as the record in the article). It is clear that Google's stated publication date (1909) is in error, perhaps a function of Google automated cataloguing algorithms or a simple data entry error. A review of the larger document indicates that the actual publication is 1969, off my a single digit from 1909. There are a number of such errors in the Google Books repository and even more of the nature where system and thinking appear next to or near each other but separated by a comma. These are false positives that lead some to believe they have discovered earlier uses.

4. Other Notable Early Uses

The term "systems thinking" appears in a Statement of Loren F. Jones of Radio Corporation of America, Camden, NJ. He is speaking in the Hearings before the Committee on Interstate and Foreign Commerce at the House of Representatives, Eightieth Congress, in the First Session on Safety in Air Navigation on January 1947. The first and only use of the term "systems thinking" occurs on page 1253 of the transcript which can be seen in its entirety [here](#)(12).

The formation of a separate group within Civil Aeronautics Administration is justified by the uniqueness and importance of the task. The Army and Navy have already established separate organizations, assigning to them the responsibilities of research and development, including such tasks as long-range planning, **systems thinking**, and coordination. [emphasis added]

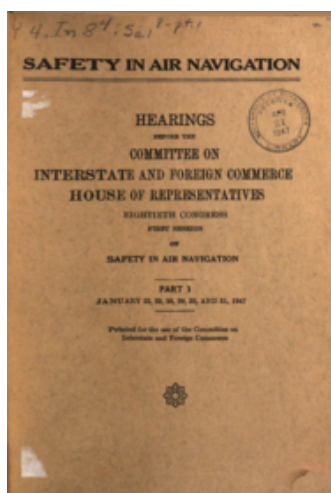


Fig. 5. Safety in Air Navigation (1947).

Dr. Kelman used the term "system thinking" (note singular system) in 1952 in an article entitled, Rational and Irrational

Authority A Holistic Viewpoint in the American Journal of Psychoanalysis on January 1, 1952) (13). According the the article,

Dr. Kelman, M.D., Harvard, 1931, D. Md. Sc., Columbia, 1938, is a Diplomate of the American Board of Neurology and Psychiatry and a Fellow of the American Psychiatric Association. He is President of the American Institute for Psychoanalysis, and a lecturer there and at the New School for Social Research. This paper was read before the Association for the Advancement of Psychoanalysis at the New York Academy of Medicine, Oct. 24, 1951.

The use of the term "system thinking" (singular) is excerpted below. Kelman goes on to use the term 3 more times in the same article. See article [here](#).

As essential background to this discussion of authority, I will discuss in sequence the terms rational and irrational, what I mean by "holism," "**system thinking**" and the importance of the concept "position" in system thinking. [emphasis added]

The term "systems thinking" (note plural systems) was used by [Rear Admiral Frederick L. Ashworth](#) (May 1963) in an article entitled, Naval Weapons of the Seventies, that appeared in Naval Aviation News (14).



Fig. 6. Rear Admiral Frederick L. Ashworth

Ashworth identified 'systems thinking' as one of the "forces and ideas I see shaping the weapons of the Seventies" (The full article is [here](#)). Ashworth's description of systems thinking is far more elaborate than a mere mention of the term as he includes it as the heading and provides some depth.

The reference to the specific term "systems thinking" occurred in a Prepared Statement of Michael Michaelis on Opportunities and Problems in Technical Innovation on December 4, 1963 at the Subcommittee of Employment and Manpower of the Committee of Labor and Public Welfare of the U.S. Senate in Washington, D.C. [p. 3180 (15)]. This document can be seen [here](#).

From there, as Google n-gram illustrates the term grew in popularity starting around the early 1960s and continues to grow to this day.

5. Conclusion

It was not the intent of this paper to provide opinion, editorial, or discussion of the meaning one might ascribe to these



Fig. 7. Rear Admiral Frederick L. Ashworth mentions systems thinking.

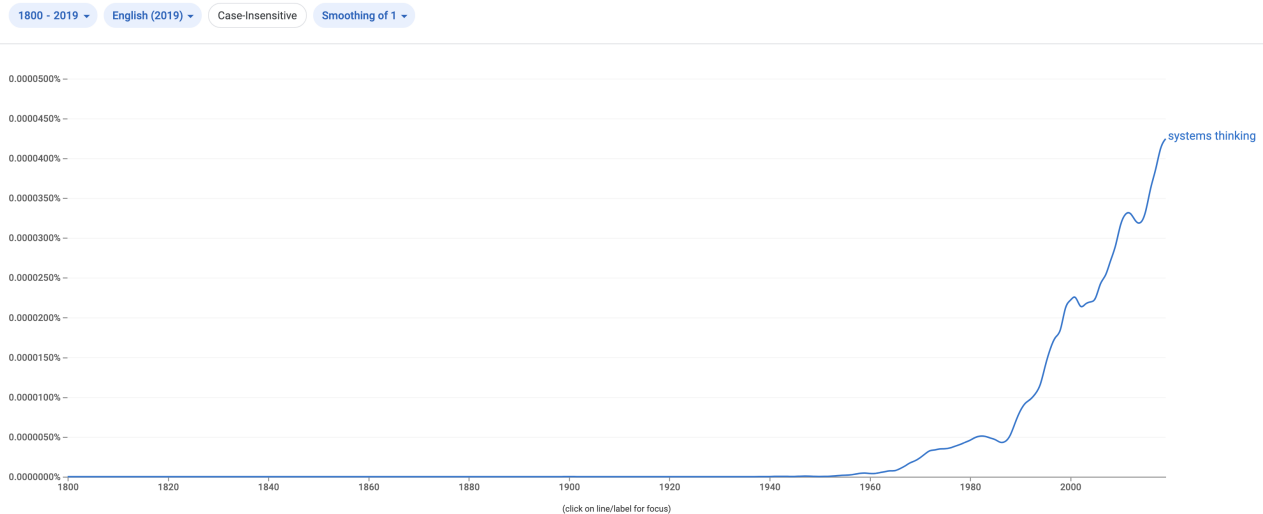


Fig. 8. Use of Systems Thinking over time.

historical facts of the use of the term "systems thinking." The origin of its use may be of some value to the field. But, it may also be simply to satisfy the curiosity of those interested in the field—perhaps little more than a question on the systems thinking edition of the Jeopardy game show. The fact that the first documented use is a criticism from a physicist is interesting especially in light of what we can now see in retrospect: that physics has been massively influenced by the ideas of systems thinking and systems theorists. Alas, those are dalliances for another paper. Herein, we hoped merely to provide a factual account of its first *documentable* use.

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