

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

Derek Cabrera^{a,b,c,d,e}

^aCornell University; ^bJeb E. Brooks School of Public Policy; ^cCornell Institute for Public Affairs; ^dCornell SC Johnson College of Business; ^eCabrera Research Lab

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

Table of Contents

1	First Use of Systems Thinking versus First Thinking About Systems	1
2	The First use of the term "Systems Thinking"	1
3	Google Search Results Can Be Misleading	2
4	Other Notable Early Uses	3
5	Conclusion	3
6	References	4

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:

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

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.

Cite this paper: Cabrera, D (2021). What is the first documented use of the term, "systems thinking"? *Journal of Systems Thinking* (21) 10. <https://doi.org/10.54120/jost.v1i1.1383>

Correspondence: dac66@cornell.edu

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

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

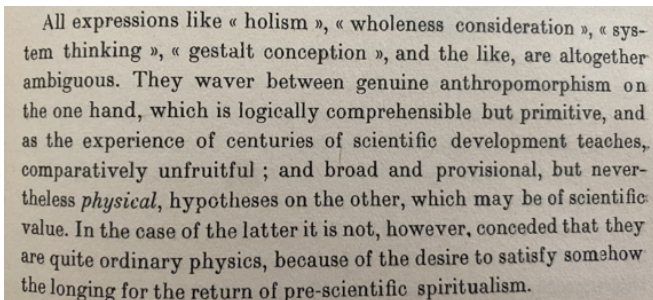


Fig. 1. Original excerpt from *Interpretations and Misinterpretations of Modern Physics* (9).

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

67 According to [Wikipedia](#) (10),

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

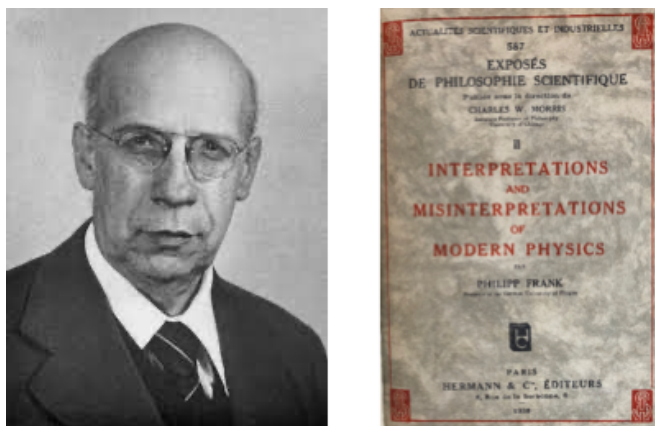


Fig. 2. Phillip Frank and the cover of *Interpretations and Misinterpretations of Modern Physics*

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

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

3. Google Search Results Can Be Misleading

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

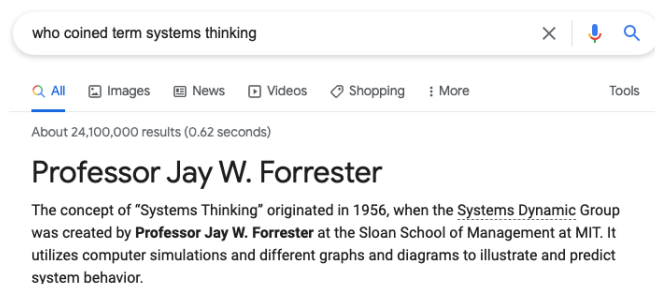


Fig. 3. Immediate search results on Google produce misleading results

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

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

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

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

113 ...1,785 km/hr (1,109 m.p.h.) for the record, although
114 he had apparently taken a wider course in an earlier
115 attempt and averaged 1,274 m.p.h. He had also
116 maintained M2.05 for 4 min.

117 This same text is shown in Figure 4 in its original form for
118 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).

1785 km/hr (1109 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 M.L.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 Commuante has benefited to a considerable extent from the powered-controls, structural and aerodynamic ideas originally developed for the Mystères, Mirages and Etendards. The Mirage IV itself is very nearly a structural and aerodynamic extra-

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

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

131 **4. Other Notable Early Uses**

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

140 The formation of a separate group within Civil Aero-
141 nautics Administration is justified by the uniqueness
142 and importance of the task. The Army and Navy
143 have already established separate organizations, as-
144 signing to them the responsibilities of research and
145 development, including such tasks as long-range plan-
146 ning, **systems thinking**, and coordination. [empha-
147 sis added]

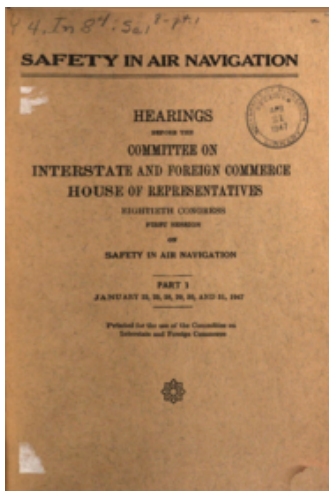


Fig. 5. Safety in Air Navigation (1947).

148 Dr. Kelman used the term "system thinking" (note singular
149 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 to the
article,

150
151
152
153 Dr. Kelman, M.D., Harvard, 1931, D. Md. Sc.,
154 Columbia, 1938, is a Diplomate of the American
155 Board of Neurology and Psychiatry and a Fellow of
156 the American Psychiatric Association. He is Presi-
157 dent of the American Institute for Psycho- analysis,
158 and a lecturer there and at the New School for Social
159 Research. This paper was read before the Associa-
160 tion for the Advancement of Psycho- analysis at the
161 New York Academy of Medicine, Oct. 24, 1951.

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

165 As essential background to this discussion of author-
166 ity, I will discuss in sequence the terms rational and
167 irrational, what I mean by "holism," "**system think-**
168 **ing**" and the importance of the concept "position"
169 in system thinking. [emphasis added]

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



Fig. 6. Rear Admiral Frederick L. Ashworth

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

179 The reference to the specific term "systems thinking" oc-
180 curred in a Prepared Statement of Michael Michaelis on Oppor-
181 tunities and Problems in Technical Innovation on December 4,
182 1963 at the Subcommittee of Employment and Manpower of
183 the Committee of Labor and Public Welfare of the U.S. Senate
184 in Washington, D.C. [p. 3180 (15)]. This document can be
185 seen [here](#).

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

189 **5. Conclusion**

190 It was not the intent of this paper to provide opinion, editor-
191 ial, or discussion of the meaning one might ascribe to these



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

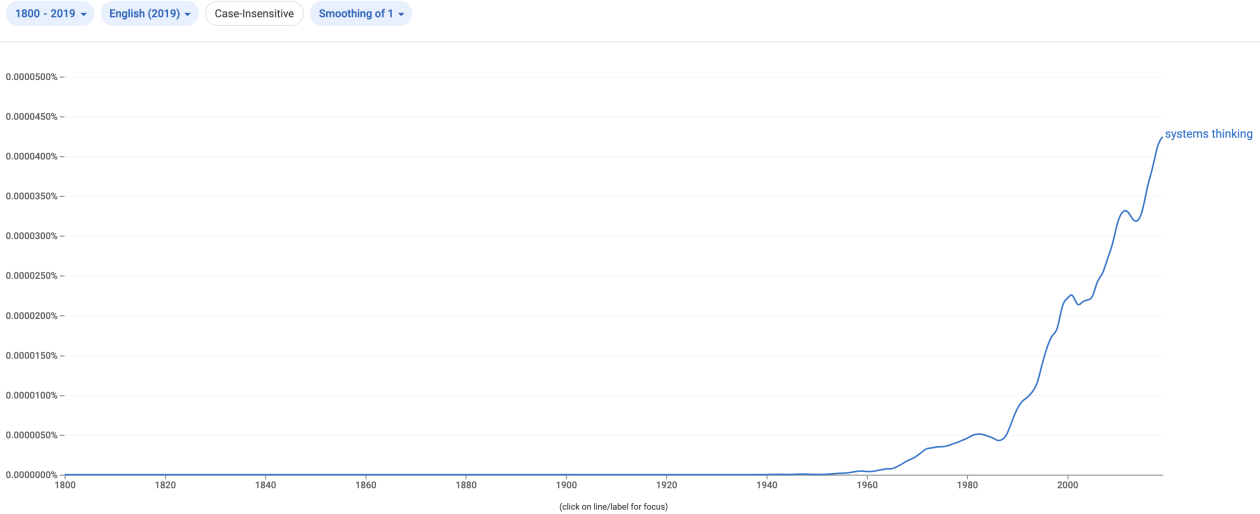


Fig. 8. Use of Systems Thinking over time.

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

203 **6. References**

204 1 D Cabrera, What is systems thinking? *Cornell Univ.* (2005).
 205 2 A Bogdanov, *Bogdanov's Tektology Book 1* ed. P Dudley. (Centre for Systems Studies Univer-
 206 sity of Hull), (1996).
 207 3 L Von Bertalanffy, General system theory. *Gen. Syst.* 1, 11–17 (1956).
 208 4 A Angyal, The structure of wholes. *Philos. Sci.* 6, 25–37 (1939).
 209 5 N Wiener, *Cybernetics or Control and Communication in the Animal and the Machine.* (MIT
 210 Press), (1961).
 211 6 WR Ashby, An introduction to cybernetics (1956).
 212 7 W Weaver, Science and complexity. *Am. Sci.* 36 (1948).
 213 8 I Prigogine, *From Being to Becoming: Time and Complexity in the Physical Sciences.* (W. H.
 214 Freeman), (1980).
 215 9 E N., P Frank, Interpretations and misinterpretations of modern physics. *J. Philos.* 36, 109
 216 (1939).

110 Wikipedia contributors, Philipp frank (2021).
 111 Cabrera, D, System dynamics != systems thinking. *Syst. Think. Dly.* 15, 8 (2015).
 112 LF Jones, Statement of Loren F Jones to the hearings before the committee on interstate and
 113 foreign commerce at the house of representatives, eightieth congress, in the first session on
 114 safety in air navigation. , 1253 (1947).
 115 H Kelman, Rational and irrational authority a holistic viewpoint. *Am. J. Psychoanal.* 12, 50
 116 (1952).
 117 FL Ashworth, Naval weapons of the seventies. *Nav. Aviat. News*, 36–38 (1963).
 118 M Michaelis, Prepared statement of Michael Michaelis on opportunities and problems in tech-
 119 nical innovation. *Subcomm. Employ. Manpow. Comm. Labor Public Welf. U.S. Senate*, 3180–
 120 3184 (1963).

217
218
219
220
221
222
223
224
225
226
227