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Knowledge Inn (in nature).14



Time line of Covid-19 (Pandemic infection) critical Data [15-Nov-2020 to22-Jan-2020]



		<mark>G</mark>	bal	9 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101 101	
S	ARS-CoV-2 (Gl	obal)			
Up to mm-yy	Infected	Deaths			
11-20	5,38,52,537	13,10,433	SAR	RS-CoV-2 (Glo	bal)
11-20	5,03,27,258	12,55,490	Up to	Infected	Deaths
11-20	4,59,16,151	11,93,070	01-05-20	33,03,296	2,35,290
10-20	4,06,52,097	11,22,036	01-04-20	9,32,605	46,809
10-20	3,38,32,124	10,11,282	01-03-20	87,137	2,977
09-20	3,29,49,407	9,95,658	01-02-20	11,953	0
9-20	2,55,84,820	8,48,084	22-01-20	313	0
8-20	1,75,94,541	6,79,439	l		
07-20	1,05,12,383	5,12,331			
6-20	62,46,042	3,74,452			

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USA					• • • • • • • •	Indi	ia	• • • • • • • •
SARS-CoV-2 (USA)						SARS-CoV	7-2 (India	.)
Up to dd-mm- vv	Infected	Deaths	Recovered		Up to dd-mm-yy	Infected	Deaths	Recovered
15-11-20	1,09,61,690	2,48,833	59,26,001		15-11-20	88,14,902	1,29,674	82,03,737
09-11-20	1,00,66,916	2,41,186	57,40,386		01-11-20	85,53,864	1,26,653	79,15,660
01-11-20	92,22,849	2,34,085	55,52,170		01-11-20	81,82,896	1,22,149	74,89,227
21-10-20	83,62,181	2,24,308	53,25,124		21-10-20	76,52,780	1,15,969	67,94,626
01-10-20	73,27,224	2,10,217	39,22,195		01-10-20	63,12,584	98,708	52,73,201
ii								







1	CUMANAN MANAN		NUUNALUNALUNALUNALU	
	SAR	S-	CoV-2	
	15-1	1	-2020	
	UK, Eu	r	<mark>ope,</mark>	
Infected	Country		Country	Infected
5,848,959	Brazil		United Kingdom	1,347,907
1,915,713	France		Italy	1,144,552
1,887,836	Russia		Germany	799,733
1,458,591	Spain		Netherlands	449,501
295,131	Canada		Switzerland	257,135
110,547	Egypt		Japan	117,113

References

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Title		EscapeCorona – Part 3	Į.		
Title		Knowledge Inn (in nature)			
Journal		Journal of Applicable Chemistry, 2020, 9 (5): 833-840			
Authors		R.Sambasiva Rao			

			4
8	Title	EscapeCorona – Part 2	2
Inte		Knowledge Inn (in nature)	8
	Journal	Journal of Applicable Chemistry, 2020, 9 (4): 671-681	
Ţ	Authors	R.Sambasiva Rao	Y

Title	Evolutionary-scientific-cure[Esc.]:Part 1. Corona virus disease [CVD]	EscapeCovid-19
Journal	Journal of Applicable Chemistry, 2020, 9 (3): 344-361	
Authors	K. Somasekhara Rao, K. Ramakrishna, Ch. V. Kameswara Rao and R.Sambasiva Rao	

## **Research Profile of Tjalling Charles Koopmans**

**Tjalling Charles Koopmans** Nobel Laureate



s-Graveland, Netherlands

Nobel prize Year, Discipline	<ul> <li>1975</li> <li>The Sveriges Riksbank Prize in Economic Sciencesin Memory of Alfred Nobel</li> </ul>
Prize motivation	Theory of optimum allocation of resources

Affiliation at the time of the award	Yale University, New Haven, CT, USA
Prize share	1⁄2
Contribution:	Renewed, generalized, and developed methods for analysis of the classical problem of economics as regards the optimum allocation of scarce resources
Co- Nobel Laureate	Leonid Vitaliyevich Kantorovich

	Acad	lemic profile of Tjalling Charles Koopmans
1922	High School	Christian High School at Hilversum Learnt mathematics, physics, chemistry, Latin, Greek, and three modern languages
1924- 1927	High School	<ul><li>Learnt Mathematics and theoretical physics</li><li>Interested in the philosophy of science,</li></ul>
1927	University of Utrecht	Mathematics (analysis and geometry)
1930-33	Master's degree	University of Utrecht
1936	Ph.D.*	University:Leiden Research director: Kramers Thesis title: Linear regression analysis of economic time series

#### Ph.D thesis:

- Tramers (leading theoretical physicist of the Netherlands) was his thesis adviser
- The doctoral dissertation was on a topic in mathematical statistics which was applicable to the newly born field of econometrics.
- The focus noton physics
- Nevertheless, dissertation was presented after consulting with Tinbergen (First Nobel prize winner in Economics in 1969) about the economic aspects to the Faculty of Mathematical and Physical Sciences in 1936.

Quantum chemistry
Koopmans, T. (1934). About the assignment of wave functions and eigenvalues to the
individual electrons of an atom. Physica, 1 (1-6), 104-113. doi: 10.1016 / s0031-8914 (34)
90011-2
"Ueber die Zuordaung von Wellenfunktionen und Eigenwerten zu den einzelnen
Elektronen eines Atoms, "Physica 1, no. 2, 1934, pp. 104-113.

Broader reading	Long vacations in 's Graveland were devoted to broader reading.
-	Ernst Mach, Geschichte der Wärmelehre, and various expositions of the theory
	of relativity,
	- Taught me how a whole field of science can at various junctures be on
	the wrong track
	Remedy: How entirely new concepts are needed to make further
	progress.

Employment. Tjalling Charles Koopmans				
Lectured for about two years at the School of Economics in Rotterdam				
Worked on business cycle modeling for the League of Nations in Geneva				
<ul> <li>World War II began;</li> </ul>				
<ul> <li>Koopmans family moved to the United States</li> </ul>				
Methods for allocating shipments between sources and destinations				
Constraint: total cost isminimized.				
This transportation problem, subsequently solved as linear programming task				
1955-1980 Professor Alfred Cowles Professor of Economics at Yale				

Died	On	26	February	1985	at	Yale-New	Haven	Hospital,
	Hamden,							
	Connecticut after suffering a series of cerebrar subkes.							



	Inspirations & experiences in academic pursuits to Tjalling Charles Koopmans
Teacher & Inspirer	My teacher Hans Kramers, leading theorist in Holland in that period
to Koopmans	Very humane and inspiring person with a gentle wit
	His attitude and style in the application of mathematics to a substantive field have exerted a pervasive influence on all my later work

Inclination to Economics:

- The 1930s switched to economics because it was closer to real life.
- Tin 1938 he succeeded Jan Tinbergen at the League of Nations

#### Perseverance

- He became acquainted with Jan Tinbergen while still at the University of Utrecht
- Joined the circle of students who met with Tinbergen once a week for a lecture and discussion
- I had the privilege of almost weekly private tutoring from Jan Tinbergen over lunch after his lecture.
- I have been deeply impressed by
  - His selflessness
  - This abiding concern for economic well-being
  - His greater equality among all of mankind
  - This unerring priority at any time for problems then most crucial
  - This ingenuity in economic modeling
  - This sense of realism
  - The Wide empirical knowledge of economic behavior relations
- On Tinbergen's advice, I read Cassel, and, with a group of friends, Wicksell et al.
- I also studied econometric and statistical literature
- 0
- After studies at Utrecht, Koopmans studied mathematical economics under Jan Tinbergen in Amsterdam 1934
- In the fall of 1935, I spent four months in Oslo with Ragnar Frisch,
- This giant of mathematical economics. His finest work tended to remain hidden for long periods in mimeographed lecture notes. At his request, I gave some lectures on the new ideas in statistics then being developed in England by R.A. Fisher, J. Neyman and others.
- However, I did not succeed in persuading him that probability models were useful in assessing the significance and accuracy of econometric estimates. I, in turn, departed impressed, but not persuaded by his econometric approach either

#### **Economics--** Contributions

- "Exchange Ratios between Cargoes on Various Routes (Non-Refrigerated Dry Cargoes)." Memorandum for the Combined Shipping Adjustment Board, Washington, D.C., 1942. Publ. in *Scientific Papers of Tjalling C. Koopmans*, Springer Verlag, 1970. pp. 77-86.
- "On the Description and Comparison of Economic Systems," (with J. Michael Montias) in *Comparison of Economic Systems*, A. Eckstein, ed., Berkeley, Univ. of California Press, 1971, pp. 27-78.

#### Personality

Koopmans was known to friends as a modest scholarOne committed to precise answers for narrow, well-defined questions

Accomplished amateur musician and chess enthusiast

#### Honors

- Elected to
  - National Academy of Sciences (United States)
  - American Academy of Arts and Sciences.
- President
  - American Economics Association
  - Econometric Society



Biological Family of Tjalling Charles Koopmans		
Father	Sjoerd Koopmans	Trained as schoolteachers
Mother	Wijtske van der Zee	<ul> <li>My father was principal of (Protestant) School with the Bible</li> <li>Worked to the limits of their strength to provide education fitting the talents of their children</li> </ul>
Wife	Truus Wanningen	<ul> <li>Economic bibliographer</li> <li>General critic of ideas and actions</li> <li>Advisor on important decisions, including those I ultimately regard as my own</li> <li>Makes beautiful photographs, weird etchings and drawings</li> </ul>
Children	Three	<ul> <li>Their choices of professions and spouses have leaned toward the life sciences, thus enlarging the range of discussions at family reunions</li> </ul>
		• Even before, but particularly after they left home, my wife and I have travelled wide for professional purposes

## (Open-heart musingsof Tjalling Charles Koopmans)

#### Study stipend

- The study stipend by the St. Geertruidsleen of Wijmbritseradeel in the Dutch province of Friesland (from where my parents originated) was awarded to me when I was 14 years old. It continued up to my 26th birthday.
- I shall be forever grateful for its support. It gave me financial, and therefore, intellectual

independence

• So, an opportunity to explore various fields of knowledge, before settling down to the particular combination of fields, to which my efforts have been devoted since

#### Decision to be a theoretical physicist

- ! Decided to pursue theoretical physics during 1930-33.
- I published two papers on quantum mechanics.in 1934. The approach later became known as Koopmans' theorem after my name. It is a way to compute the energy required to ionize the atoms of alkali metals (sodium, potassium, etc.). In fact, it is more general than this application.
- ! The main proposition was my own idea, Kramers, my research director guided the writing; also supplied the proof. But, Kramers's generosity and my inexperience combined to prevent his being listed as co-author of that paper
- A timid compromise between my desire for a subject matter closer to real life and the obvious argument in favor of a field in which my mathematical training could be put to use.

#### Faith

- I greatly upset my parents by declining to confess to the Protestant faith and become a member of the church.
- Then followed reading in psychology and psychiatry, and conversations with two fine people in these fields. At one time I even considered switching over to psychiatry for which I now know I would not have been suited.

## Gifting of Koopmans' (Nobel prize) Medal by his family to Cowles

## Koopmans' (Nobel prize) Medal gifted to Cowles



- Sobel Prize Medal of Koopmans was handed
- To former Cowles Director, Al Klevorick, by Anne Frankel (Koopmans' daughter)
- During an intimate ceremony held at 28 Hillhouse Avenue on May 24th. 2019



Al Klevorick accepted the gift on behalf of the Cowles Foundation
 During the ceremony, Koopmans' daughter (Anne Frankel )spoke of her father, his work

Display of medal	The medal is planned to be permanently displayed in the Cowles Foundation building at 30 Hillhouse Ave.
Inspiration of medal to	Faculty and students who come here to see it" said Nordhaus
Motivation of donation of Koopmans' Nobel Medal	<ul> <li>He was a life-long staff member of Cowles Foundation</li> <li>Served two terms as director in the 1960s,</li> <li>More importantly, was instrumental in moving the Foundation (then the Cowles Commission) from the University of Chicago to Yale in 1955.</li> </ul>



- Nordhaus quoted the speech(link is external) given by Koopmans during the 1975 Economics Nobel banquet.
- In the speech, Koopmans referenced one of Nordhaus' early studies on environmental issues which was an honor to Nordhaus, but more to the point, it showed Koopmans' foresight.
- One line from the speech read, "[Nordhaus'] study is an open invitation to climatologists and agronomists to trace the probable effects of the CO2 standard on climate variables and hence on polar icecaps, on ocean levels and so on

"That was what was so special about working with Tjalling," said Nordhaus. "He had fundamental and deep insights into so many areas. It lives with me and my spirit in a way I think about economics, and a way I think about society and social issues."



**Robert Shiller, Yale Economics Professors, Nobel laureate** 

- Professor Robert Shiller spoke of Koopmans' influence in the use of theory in the field of economics.
- Shiller went on to explain how the Cowles Foundation seal and its motto changed when the foundation moved to Yale, and
- How the new motto was influenced by Koopmans after the Foundation's move.
- "The motto is, 'Theory and Measurement,' which is exactly a transposition of [Koopmans'] 1947 paper," noted Shiller.
- "I think the spirit of [Koopmans'] research lives on at Cowles," said Shiller.
- "Tjalling was very import in forming the ethos and method that lives on today in the Cowles Foundation, and more broadly, the Yale community."



NL, Anne Frankel, Joseph Frankel, NL

Biological fam	ily of Koopmans at function	
		Sparkles from brain
		Proin shild
		Diamenina
Martin Unsal-Fran	kel, Anne Frankel, Joseph Frankel,	
Koopmans daughter	Anne Frankel	
Joseph Frankel Husband of Anne Frankel		
-		
Martin Ünsal- Frankel	Son of Anne Frankel & Joseph Frankel	
Gün Ünsal-Frankel	Wife of Martin Ünsal-Frankel	

Joseph Frankel	Joseph Frankel reminisced of Koopmans from a "different perspective" with an anecdote as a "young suitor" when courting Anne.
	Joseph Frankel said he was given a problem by Koopmans to solve to see if he was capable of a shift in perspective. "Fortunately, I passed that one," quipped Frankel.

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