

Leon Moses and Walter Isard: Collaborators, Rivals or Antagonists?

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Objectives of this talk

- Examine contributions of Leon to regional science
 - Research on interindustry models and industrial location theory
 - Participation in the Regional Science Association
 - Contributions to the field of regional science
- Explore the relationship between Leon and Walter Isard, founder of regional science

LEON MOSES

- Born: New York City 1924
- Ohio State University B.A. 1945
- Harvard University M.A. 1950 Ph.D. 1952
- Part-time and visiting teaching appointments 1946-52
- Research Associate, Harvard Econ. Res. Project 1952-59
- Assistant Professor, Harvard 1957-59
- Associate Professor of Economics, Northwestern 1959-63
 - Assistant Director, Research, Transportation Center 1959-63
- Professor of Economics, Northwestern 1963-05
- Director, Transportation Center 1974-79
- Professor Emeritus of Economics, Northwestern 2005
- Died: age 88, Evanston, Illinois 2013

WALTER ISARD

- Born: Philadelphia 1919
- Temple University A.B. 1939 1935-39
- University of Chicago 1941-42
- Harvard University M.A. 1941 Ph.D. 1943
- Social Science Research Council 1942-43, 1946-48
- Part-time and visiting teaching appointments 1946-49
- Research Fellow, Associate, Econ. Research Project
Lecturer, Harvard University 1949-53
- Associate Professor of Reg. Economics, M.I.T. 1953-56
- Professor of Economics & Reg. Science, UPenn 1956-79
- Professor of Economics & Reg. Science, Cornell 1979-89
- Professor Emeritus of Economics, Cornell 1989
- Died: age 91, Drexel Hill, Pennsylvania 2010



Leon Moses ~ 1960



Walter Isard ~ 1960

What is *Regional Science*?

- A field of the social sciences concerned with analytical approaches to urban-regional problems: **location theory** or spatial economics; location, **transportation** & migration analysis; urban land use; **interindustry analysis**; environmental & ecological analysis; resource management; urban-regional policy; geog. information systems; spatial data analysis
en.wikipedia.org/wiki/Regional_Science.
- Synthesis of aspects of economics, geography, urban planning, transportation and environmental engineering related to urban and regional systems
- Focus on theory and methods of regional analysis

When did Regional Science begin?

- Following WW II, interest in theory, methods of analysis, data, computing and solution of practical problems of regional expansion was increasing in many social sciences and urban-regional planning
- Younger scholars in these fields began meeting and discussing the formation of an association.
- Walter Isard was a young economist at the Harvard Economic Research Project of W. W. Leontief (1906-1999), a pioneer in the use of industrial data to create a linear model of the interindustry transactions in national and regional economies
- Being young and very active, in 1954 Walter motivated a group of social scientists to found the 'Regional Science Association.'

What did this have to do with Leon?

- Leon, a graduate student in economics at Harvard, became interested in Leontief's research, and was hired as a research assistant about 1950
- the future directions of Leontief's research were:
add dynamics, and add regions
- Isard was a research associate in Leontief's Project studying regional and interregional extensions of Leontief's national economic model
- Leon opted to work with Walter on the development of an interregional, interindustry model

What did Leon contribute to the Project?

- Interregional input-output: a method for analysis of regional interdependence, Ph.D. thesis, 1952.
- ‘Stability of interregional trading patterns and input-output analysis,’ *American Economic Review* 45 (5) 1955; Appendix with John Fei.
- Today, the Chenery-Moses concept is widely cited as a design for an interregional, interindustry model.
- ‘A General Equilibrium Model of Production, Interregional Trade, and Location of Industry,’ *Review of Economics and Statistics* 42 (4) 1960.

What were Leon's other activities at Harvard?

- Critical reviews of research of regional scientists
- 'Location and the theory of production,' *Quarterly Journal of Economics*, 72 (2) 1958
- Teaching in regional economics and location theory
- Coauthored with W. Isard, et al, *Methods of Regional Analysis*, Wiley, 1960:
 - Chapter 5, Interregional Flow Analysis and Balance of Payments Statements, 122-181;
 - Chapter 6 B, Regional Cycle and Multiplier Analysis, 184-189;
 - Chapter 8 G, Alternative Interregional and Regional Input-output Models, 344-34 (based on Chenery-Moses)
- Each of these items deserves some explanation.

Leon's interactions with Walter and others

- W. Isard and R. E. Kuenne, 'Impact of steel upon the Greater New York-Philadelphia industrial region,' *Review of Economics and Statistics* 35 (4), 1953, partially based on Kuenne's Ph.D. thesis and other studies of Isard and his students.
- Purpose: 'development in the theory of agglomeration and of the broad spatial clustering of all economic activities by grafting on to ... location theory a modified regional input-output schema. Viewed from a different standpoint, we attempt an impact study, wherein the direct and indirect repercussions of the location of a basic industry in a region are evaluated.'

- Two years later, Leon published a four-page critique of the paper. One can only speculate why. For example, he wrote:
 - Establishment of a new industry in an area may cause other industries to expand ... and also creates additional demand. Any attempt to predict the effect on regional economic development of a new industry must **analyze carefully these forward and backward relationships**.
 - Their 'idea of combining input-output and locational analysis in this endeavor is a good one. Their pioneering effort to implement this idea ... contains **a number of theoretical failings**. The most outstanding is the **almost complete absence of any locational analysis**.
- Robert Kuenne responded with many points; one of the most salient was:
 - I fail to see what use the results will be unless an interregional model in which prices have a true economic function is available for such projections. Nevertheless, **Moses' suggestion is provocative** and should prove fruitful when ... tools of analysis have reached the state implicitly assumed.

- Two years after publication of Isard's *Location and Space Economy*, Leon published 'Location and the theory of production,' *QJE* 72 (2), 1958, giving the paper at the Regional Science Association Meetings
 - My objective is to place the theory of location within the main body of economic theory. I wish to make the theory of location an integral part of the theory of production and to investigate the implications of factor substitution for the locational equilibrium of the firm. My main conclusion is that **profit maximization requires a proper adjustment of output, input combination, location, and price**. Optimizing values of these three variables can be determined with analytical tools derived directly from traditional economic theory.

- In analyzing the location problem of an individual firm, Weber, Hoover, and Isard begin by assuming that there are **no geographic variations in the prices or qualities of inputs at alternative sources**. From this assumption they derive two conclusions:
 - (1) that there are no geographic differentials in production costs, and hence, that
 - (2) the optimum location is the point of minimum transportation costs.
- However, the two conclusions do not follow from the aforementioned assumption alone. They also involve an additional one, that **the production function is linear**. There are no alternative sources for inputs in the example with which we have been working. However, we have permitted factor substitution and therefore have altered the conditions for optimality in location.'

- Leon's point was not unknown to Walter; however, he had proceeded along the lines of the classical analyses. This point was discussed in my graduate course on Location Theory in 1961, as documented by marginal notes in my copy of Isard's text.
- **Beckmann and Thisse** noted this point in their chapter in the *Handbook of Regional and Urban Economics* (1986) on The Location of Production Activities, and **proceeded to review results for a broader range of assumptions than either Walter or Leon.**
- In the Preface to *Methods of Regional Analysis*, Walter **acknowledged** Leon's paper as an example of 'steps ... taken to obtain a better integration of location and production theories.'

- W. Isard, et al., *Methods of Regional Analysis*, Wiley, 1960. In the Preface, Walter stated the book was conceived and outlined in 1954.
Leon co-authored parts of three chapters:
 - Chapter 5, Interregional Flow Analysis and Balance of Payments Statements, pp. 122-181;
 - Chapter 6 B, Regional Cycle and Multiplier Analysis, pp. 184-189;
 - Chapter 8 G, Alternative Interregional and Regional Input-output Models, pp. 344-349 (based on Chenery-Moses)
- Footnotes to Chapters 5 and 6 B acknowledge Leon's contributions. Just how much Leon actually contributed to the book will remain unknown.

Regional Science Association

- Leon was a participant and contributor to the Regional Science Association Meetings as an author and discussant (1954-56, 1959, 1961-63, etc). In 1963, Walter judged that the RSA was sufficiently strong to hold its meetings independently, which it did from that year forward.
- Walter served as President of the RSA for four years. Then, he asked senior academics in urban planning, economics and geography to lend their support to the fledgling society by serving as President, and he took the title, Honorary Chairman. Initially, the Presidency rotated among economists, geographers and urban planners. Later, early regional scientists were included. The record of those who served is shown below.
- The duties of the President were to give a Presidential Address and chair the annual Council Meeting.
- Walter continued to run the Association, as before.

- Robert Mitchell, USA, 1960, City Planning
- Edward Ullman, USA, 1961, Geography
- Edgar Hoover, USA, 1962, **Economics**
- William Garrison, USA, 1963, Geography
- William Wheaton, USA, 1964, Political Science
- Charles Leven, USA, 1965, **Economics**
- William Warntz, USA, 1966, Geography
- Britton Harris, USA, 1967, City Planning
- Benjamin Stevens, USA, 1968 Reg. Planning & Econ.
- Torsten Hägerstrand, Sweden, 1969, Geography
- Benjamin Chinitz, USA, 1970, **Economics**
- Gerald Carrothers, Canada, 1971, Reg. Planning & Econ.
- Kazimierz Dziewoński, Poland, 1972, Geography
- **Leon Moses, USA, 1973, Economics**
- Genpachiro Konno, Japan, 1974, **Economics**
- Stan Czamanski, USA and Israel, 1975, Regional Science

- Edgar Hoover (1907-1992), an early location theorist, was the first economist to serve. Leon's close friend, Charles Leven (1928-2011) was next, then Benjamin Chinitz (1924-2009).
- I recall Walter being somewhat hesitant to ask Leon to serve, not quite knowing what to expect. Leon served with distinction, presenting a memorable **Presidential Address, in which he thoroughly criticized the weaknesses of interregional, interindustry models**, to which he had contributed so much. It was his last paper on the subject. Leon had moved on.
- The main question discussed at each Council Meeting was the location of the next Meetings. In 1973, Leon proposed Chicago. He searched for a suitable hotel, one not too expensive, but not excessively seedy. Somehow, Leon identified the prestigious **Ambassador West Hotel** on Chicago's near north side. Highly successful meetings were held there in 1974, 1978 and 1983.
- Leon also served as Associate Editor of *Journal of Regional Science*, when an editorial board was first appointed in 1967.



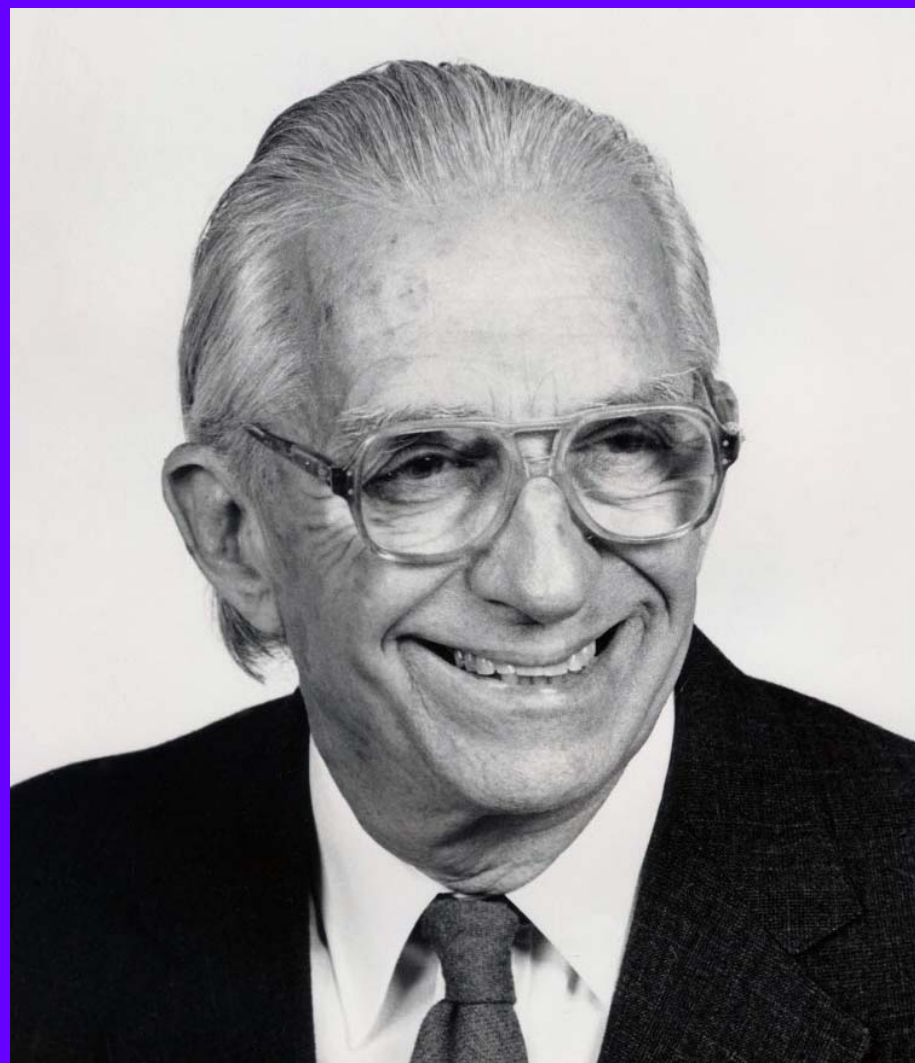
Leon Moses ~ 1974



Walter Isard ~ 1975



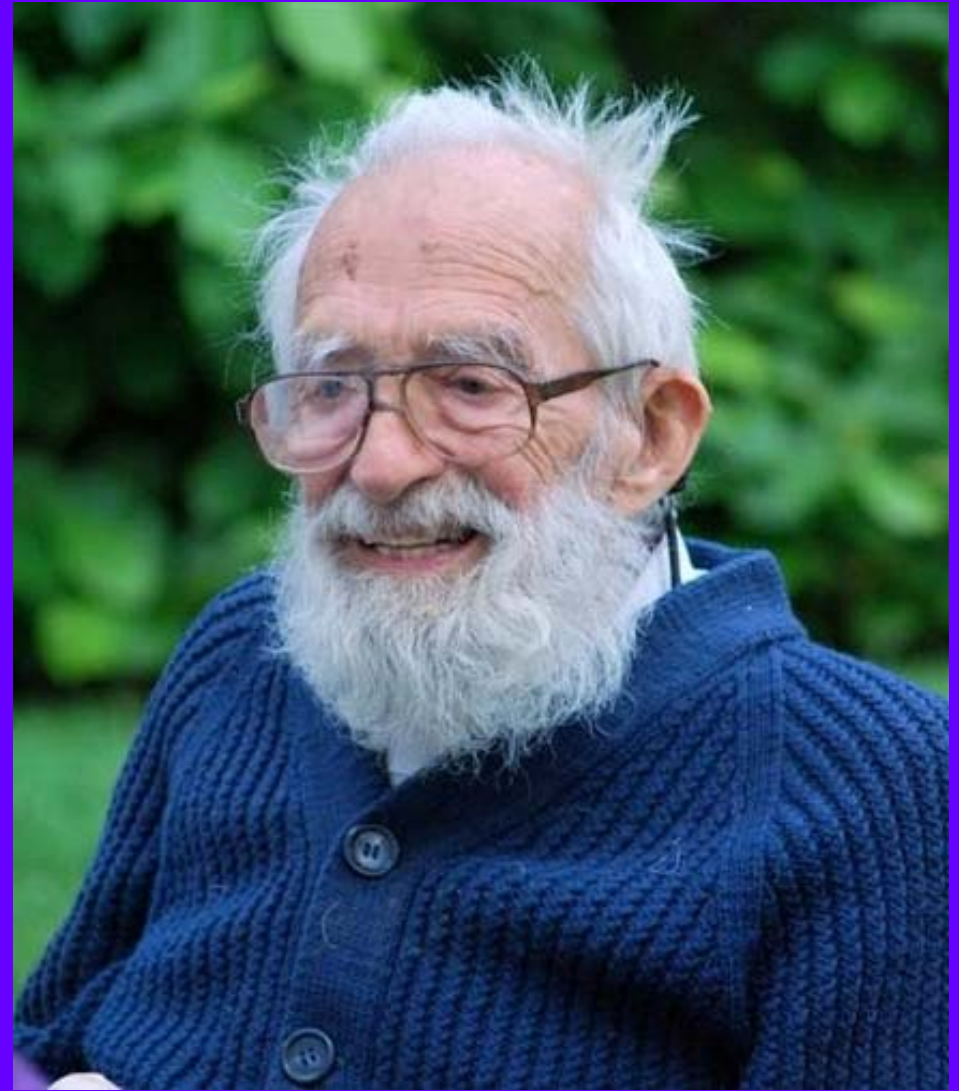
Leon Moses ~ 1990



Walter Isard ~ 1990



Leon Moses ~ 2011



Walter Isard ~ 2009