



Guide to the Burt Grad General Electric and IBM records

Creator: Burt Grad

Dates: 1949-1978

Extent: 4.17 linear feet, 3 record cartons and 1 manuscript box

Collection number: X6906.2014

Catalog number: 102726885

Collection processed by: Adrienne Harling, August 2016

Finding aid prepared by: Adrienne Harling and Sara Chabino Lott, August 2016

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Abstract

This collection contains records from Burt Grad's work with General Electric and IBM from 1949-1978. Grad did substantial work on factory automation and business systems management, reflected in large projects called the Integrated Systems Project (ISP) and the Study Organization Plan (SOP), both documented in this collection. The collection also contains content about decision tables – a tool Grad developed to map cause-and-effect logic for systems planning purposes. Additional areas of interest include Grad's work on Application System Development Method (ASDM), factory simulation models, the Productron computer, TABSOL software for automation of decision tables, and more. Materials consist primarily of technical reports and notes, correspondence, manuals and marketing materials for products, and some articles.

Administrative Information

Access Restrictions

The collection is open for research.

Publication Rights

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Languages

Collection materials entirely in English.

Preferred Citation

[Identification of Item], [Date], Burt Grad General Electric and IBM records, Lot X6906.2014, Box [#], Folder [#], Catalog [#], Computer History Museum.

Immediate Source of Acquisition

Gift of Burt Grad, 2014.

Processing Information

Burt Grad, Carl Anne Ances, Doug Jerger and the Software Industry Special Interest Group (SI SIG) inventoried this collection in December, 2008, as part of the donation process. Additionally, an item level listing of materials within folders of this collection was also provided (no author or date indicated). Both inventories were used during processing to restore original order, and descriptive information from the item-level inventory was included in catalog records where applicable.

Repository

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Biographical/Historical Note

Burton (Burt) Grad was born in 1928 in Philadelphia, where his mother and her family had emigrated from the Ukraine in 1914. In 1932, Grad's family moved from Philadelphia to Washington, D.C., where he completed high school. He then received a Bachelor of Management Engineering degree from Rensselaer Polytechnic Institute in Troy, New York, in 1949.

Grad worked for General Electric (GE) from 1949 to 1960. He started in the Manufacturing Training Program, followed by a position in the Production Control department of the Large

Steam Turbine factory. At the factory, Grad used International Business Machines (IBM) punched card machines and plug boards to help set up a manufacturing control plan. He went on to work with the Corporate Production Control Services department in New York City, where he programmed a Univac I computer for use at the Dishwasher and Disposal Department in Louisville, Kentucky. Grad also led a factory simulation project, designed the Productionron computer, and helped a variety of GE manufacturing departments implement computer automation for production control.

During the late 1950s, Grad started the Integrated Systems Project (ISP) which was aimed at automating the complete information flow in a factory. Initially the project was at the 39 Frame Motor plant in Ft. Wayne, Indiana where he developed the concept of decision tables, which was a method of documenting cause/effect logic. The Computer Usage Company (CUC) wrote a computer program called TABSOL for GE that would interpret and run the decision tables.

When the 39 Frame motor project was terminated for budget reasons, Grad was able to initiate an expanded ISP effort at a meter plant in Lynn, Massachusetts. The results demonstrated potential to increase efficiency and profit margin for GE through both information and factory operation automation, but upper management was not prepared to build or restructure a plant based on the Integrated Systems approach or in publishing the study results. Quite frustrated, Grad left GE and went to work at IBM in 1960.

Shortly after Grad started with IBM he became a project manager in the Data Processing Division in White Plains, New York leading the Study Organization Plan (SOP) project. SOP was related to the ISP work, but was focused on a general approach to developing integrated information systems for any business. With IBM support, *Management Systems* was published by Holt, Rinehart and Winston in 1968 (authors: Thomas B. Glans, Burton Grad, David Holstein, William E. Myers, and Richard N. Schmidt).

Grad was the Data Processing Division's representative on IBM's three member Unbundling Task Force, which was responsible for planning the announcement of separately priced software in 1969. The Data Processing Division was then made responsible for developing and marketing the application software products and Grad was named as director of development for FICUT, one of four industry groups within the Data Processing Division (FICUT stood for financial, insurance, communications, utilities, transportation). Grad worked in software development with the Data Processing Division until the mid-1970s, when he moved to IBM Research where he supported Harry Markowitz's work on a simulation-related program called EAS-E and worked on application development methodology.

Starting in the 1970s, Grad served as a representative for IBM at ADAPSO, the computer software and services trade association, within the Software Industry Association. Grad served on numerous committees at ADAPSO in the 1970s and 1980s, including the Technical Information Service Committee.

In 1978, Grad left IBM and started his own consulting firm, Burton Grad Associates, Inc. Leveraging the relationships with software companies that he had developed through ADAPSO, he helped clients with strategic planning, organizational consulting, due diligence studies, and valuation studies. In the 2000s, Grad's consulting work slowed down and he spent more time in collecting and preserving software industry historical records for the Software History Center, which Luanne Johnson and he had co-founded in 2000. Grad served as co-chair with Johnson of the Software Industry Special Interest Group (SI SIG) at the Computer History Museum. He currently lives in Westport, Connecticut.

Scope and Content of the Collection

The Burt Grad General Electric and IBM records consist of materials collected by Burt Grad during his career at General Electric and IBM from 1949-1978. The records include technical documentation of and research informing Grad's work on specific projects at both companies, especially focused on factory automation and the integration of systems across departments in factories and offices. These projects include, but are not limited to, the Integrated Systems Project (ISP) at General Electric and the Study Organization Plan (SOP) at IBM.

The use of decision tables as a tool for both automation and system integration are well documented in this collection. Materials about software products such as TABSOL that were developed for automation of decision tables are also represented. Some materials pertain to the use of early computer hardware in factory settings, and early software development.

A significant amount of materials in the collection are technical notes and reports authored or co-authored by Grad. There are also correspondence, memoranda, and handwritten notes relating to the projects Grad was involved in. Some articles, manuals and promotional materials for software and hardware products are also in the collection.

The series are arranged in their original order. Folders within series are arranged chronologically except for subseries 3.1, which is arranged alphabetically.

Arrangement

The collection is arranged into 3 series:

Series 1, General Electric records, 1949-1962

Series 2, Special Projects, 1957-1977

Series 3, International Business Machines records, 1960-1978

Indexing Terms

Automation in manufacturing

Computer software—development

Decision logic tables

General Electric Company

Grad, Burton

International Business Machines Corporation

Related Collections at CHM

Burton Grad Associates, Inc. records, Lot X7213.2014, Catalog number 102726886.

Grad, Burt (Burton) oral history : General Electric Years, Lot X4362.2008, Catalog number 102702248.

Grad, Burt (Burton) oral history : International Business Machines (IBM), Lot X4362.2008, Catalog number 102701925.

Grad, Burt (Burton) oral history : Burton grad Associates, Inc., Lot X4362.2008, Catalog number 102746731.

Grad, Burton and Hugh Williams oral history, Lot X4562.2008, Catalog number 102658225.

Collection Contents

Series 1, General Electric records, 1949-1962

The materials in this series include documentation of Grad's work at General Electric. Technical notes and reports (many authored by Grad), handwritten notes, correspondence, and product materials are represented in the collection. Examples of materials in this series include Grad's recognition for a suggestion he made for making a rubber testing process more efficient when he was in the Manufacturing Training Program, materials relating to Grad's work on automation of assignment vouchers to factory workers, more general automation of factory planning, scheduling, and manufacturing control, and the Integrated Systems Project (ISP). This series is arranged chronologically.

Series 2, Special projects, 1957-1977

The special projects series includes documentation of projects that Grad worked on at both General Electric and IBM: decision tables and integrated systems research. Both of these topics are represented elsewhere in the collection as well. Please refer to other series (GE and Special Projects) for additional materials on decision tables, the ISP and automated factory design. This series is arranged into two subseries:

Subseries 2.1, Decision tables, 1959-1977

Subseries 2.2, Automated factory design project, 1957-1966, bulk 1957-1963

Subseries 2.1, Decision tables, 1959-1977

The decision tables subseries consists of instructional manuals, technical reports and notes, and information about computer applications developed to automate decision tables. Decision tables are a method of strategic decision making that Grad developed while at GE. Similar tables were developed by others, and Grad documented his own ideas, practices, and development of software as well as collected related work by others. This subseries also includes significant documentation of TABSOL, a program developed by Grad and the Computer Usage Company (CUC) in the 1960s. This subseries is arranged chronologically.

Subseries 2.2, Automated factory design project, 1957-1966, bulk 1957-1963

This subseries is primarily focused on integrated systems work that Grad did at both GE and IBM. It contains technical notes and papers, the majority of which are authored or co-authored by Grad.

Series 3, International Business Machine records, 1960-1978

This subseries contains records from Grad's work at IBM. It contains select correspondence, technical reports, and other materials from Grad's time working in the Research department, technical reports and presentation materials for the Study Organization Plan (SOP), and loose documents that were not inventoried during the donation process but were found in the collection. This series is arranged into three subseries:

Subseries 3.1, Research, 1962-1978, bulk 1972-1978

Subseries 3.2, Study organization plan, 1960-1975, bulk 1961-1963

Subseries 3.3, General, 1960-1977

Subseries 3.1, Research, 1962-1978, bulk 1972-1978

This subseries contains select materials pertaining to Grad's time working with IBM's research department. Highlights include documentation of trips that Grad took (to the

Soviet Union and the West Coast) and Grad's work on the Application System Development Method (ASDM). This subseries is arranged alphabetically by folder title.

Subseries 3.2, Study organization plan, 1960-1975, bulk 1961-1963

This subseries contains primarily technical reports and notes from Grad's Study Organization Plan (SOP) project at IBM. This project built on Grad's work on integrated systems, but was generalized for any kind of business rather than specific to manufacturing. Grad assembled and led a team that included Tom Glans, David Holstein, and Lee Baker, who are represented as authors in this subseries. This subseries is arranged chronologically.

Subseries 3.3, General, 1960-1977

This is a miscellaneous series containing technical reports, manuals and promotional materials for IBM products, correspondence and notes. Some of the materials in this subseries were found in the collection, but not represented in the item-level inventory that was created during the donation process. This subseries is arranged chronologically.

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Folder List			
General Electric records			
Box 1	102726489	Suggestion acknowledgment re: valve test equipment	1949
Box 1	102726487	The choice of lot inspection plans on the basis of cost	1949-03-12
Box 1	102726488	A report on the control station in the Works Laboratory of the Bridgeport Works	1949-05-09
Box 1	102726490	Overdue E-3 cage orders	1949-1950
Box 1	102726486	Productron analog computer	1950; 1955; 1957; 1959
Box 1	102726536	Personal folder	1951; 1954-1955; 1958-1960
Box 1	102726491	The derivation and use of an economical order quantity formula	1953
Box 1	102726534	Punched card stock control system for batch type operation	1953-12-22
Box 1	102726527	Ideas folder	1954; 1956-1957; 1959
Box 1	102726483	Reference book on production control services projects	1954; 1957; 1959-1961
Box 1	102726493	Bin reserve	1954-03-11
Box 1	102726492	Economic ordering quantity guide	1954-12
Box 1	102726494	Transformer slitting problem	1955
Box 1	102726496	Fiscal week dating plan using GE calendar	1955-03-31
Box 1	102726495	The lowly voucher - dated and updated	1955-08-02
Box 1	102726497	Warehouse stock reporting and analysis project	1955-12-22
Box 1	102726498	Dynamic production scheduling	1955-14

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
	General Electric records		
Box 1	102726502	Association Island : 1956 conference	1956
Box 1	102726485	Warehouse stock control workshop report	1956-02-15
Box 1	102726500	First Productron installation scheduled	1956-03
Box 1	102726541	Memos from E.G. Cox to W.B. Pomeroy regarding warehouse inventory tape transactions	1956-04
Box 1	102726501	Warehouse project : coding of transactions	1956-06-27
Box 1	102726542	GE apparatus sales division registration form	1957
Box 1	102726539	Inventory control via IDP	1957
Box 1	102726504	Modern materials handling special report : how to plan receiving operations (parts 1 and 2)	1957
Box 1	102726538	39 frame systems project IBM	1957-01-14
Box 1	102726503	Production control information letter (pro & con features)	1957-1958; 1961
Box 1	102726507	Abstract formulation of data processing problems	1958
Box 1	102726537	An approach to operations structure	1958
Box 1	102726505	Simulation project folder	1958
Box 1	102726506	A standardized representation for business problems	1958-03
Box 1	102726509	Operations research & synthesis : project report no. 70 : mechanized budget system	1958-06-01
Box 1	102726508	Tempo report : characteristics of optimum inventory policies	1958-11-10
Box 1	102726524	Information process analysis	1959
Box 1	102726514	Documentation techniques survey	1959; 1961

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
	General Electric records		
Box 1	102726510	Engineering computer user symposium registrants	1959-05-19
Box 1	102726517	Laminar bucket program : an application of logic table techniques	1959-09-21
Box 1	102726512	General Electric parts list form	1959-10-06
Box 1	102726519	Some factory aspects of warehousing : distribution systems project	1959-10-16
Box 1	102726515	Clearinghouse report : medium transformer department computer applications	1959-12-01
Box 1	102726516	Integrated Systems Project report : information process charting and physical operation flow charting	1959-12-31
Box 1	102726518	TABSOL release folder	1959-1960
Box 1	102726532	Burt Grad resume (before IBM)	ca. 1959
Box 1	102726520	Design structure tables for large steam turbine-generator laminar buckets	1960-01-04
Box 1	102726543	Design structure tables for SE incoming line switches	1960-01-04
Box 1	102726484	The Integrated Systems Project at General Electric	1960-03-28
Box 1	102726511	TABSOL printout	1960-08
Box 1	102726526	GE 225 general compiler manual	1960-10
Box 2	102726525	A test of alternative facility designs and operations by simulation	1961-03
Box 2	102726513	GE 225 forward sort/merge generator manual : edition 1	1961-06
Box 2	102726529	A general approach to information systems design	1962-08

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
General Electric records			
Box 2	102726530	Base data tables	undated
Box 2	102726528	Cost of processing an order	undated
Box 2	102726521	Design structure table for outdoor unit parts sheet	undated
Box 2	102726531	Industrial data accumulator (IDA) brochure	undated
Box 2	102726533	New System Laundry : an overview	undated
Box 2	102726540	Partial draft of document	undated
Box 2	102726499	Process analysis	undated
Box 2	102726535	Spindlemaster specifications	undated
Box 2	102726523	Work sheet : revision of (305-A4-PR-6214) remove ties - formvar prices - medium A.C. motor department	undated
Box 2	102726522	Work sheet : revision of Logtab (59LS23) illustrative example for machining buckets	undated
Special projects : Decision tables			
Box 2	102726544	LOGTAB : a logic table technique	1959-03-10
Box 2	102726545	Integrated Systems Project report : TABSOL : a generalized solution to programming decision systems	1959-03-21
Box 2	102726548	Preliminary approach to tabular programming	1960-10
Box 2	102726546	TABSOL : a fundamental concept for systems-oriented languages	1960-12-14
Box 2	102726577	Reference book on decision logic and other topics	1960-1962
Box 2	102726576	Decision Tables folder	1960-1962; 1972
Box 2	102726579	1401 T.P. implementation manual draft	1961
Box 2	102726580	Reference book : tabular techniques development #1-4	1961
Box 2	102726581	Tabular techniques development #1 and #2	1961
Box 2	102726557	Tabular techniques development #5 and #6	1961

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
	Special projects : Decision tables		
Box 2	102726547	Systems engineering services clearinghouse report : preliminary reference manual draft TABSOL - 225	1961-02-01
Box 2	102726549	United systems approach clearinghouse report : tabular techniques reference manual	1961-02-08
Box 2	102726550	GE 225 TABSOL manual (preliminary)	1961-03
Box 2	102726551	Tables signal better communication	1961-06-01
Box 2	102726552	Tabular techniques development distribution #3 report	1961-06-23
Box 2	102726553	Systems engineering services clearinghouse report : tabular form in decision logic	1961-07-01
Box 2	102726554	Systems engineering services clearinghouse report : Decision Tables : a preliminary reference manual	1961-09
Box 2	102726555	Systems engineering services : preliminary manual : 1401 tabular programming system	1961-10-15
Box 2	102726556	GE 225 LJED TABSOL system	1961-11
Box 2	102726558	1401 tabular programming system evaluation program	1961-11-06
Box 2	102726575	Automated decision making clearinghouse	1961-12-15
Box 2	102726565	IBM data processing techniques : Decision Tables : a systems analysis and documentation technique	1962
Box 2	102726559	Systems engineering services : tabular descriptive language : draft and preliminary languages	1962-01
Box 2	102726560	IBM technical report : tables, flow charts, and program logic	1962-02-26

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
	Special projects : Decision tables		
Box 2	102726561	Decision Tables training manual	1962-03
Box 2	102726562	Systems engineering services : preliminary manual : 7080 decision table system	1962-04-10
Box 2	102726563	An introduction to the decision logic table technique	1962-07-10
Box 2	102726564	Preliminary manual : 1090 Fortran decision table system	1962-07-15
Box 2	102726567	IBM Decision Tables : practice problems & solutions (education planning booklet)	1963
Box 2	102726566	Decision table tutorial using DETAB-X	1963-03
Box 2	102726568	Conversion of limited-entry decision tables to computer programs	1964-05
Box 2	102726578	DETAB/65 folder	1965
Box 2	102726569	System development corporation tech memo re : Decision Tables : an annotated bibliography abstract	1965-04-12
Box 2	102726570	Decision Tables folder	1967-1968
Box 2	102726587	Decision Table usage in the systems & procedures function	1968-10-21
Box 2	102726571	Burt Grad memo to J.T. Griffin re: using Decision Tables	1973
Box 2	102726572	Decision Tables folder	1971; 1974
Box 2	102726574	The dark side of structured programming	1975-11
Box 2	102726573	Decision Tables : Glans folder	1977
Box 2	102726585	Chapter 5 : integrating Decision Tables into a system	undated
Box 2	102726586	IBM application program : IBM 1401 decision logic translator (1401-SE-05X) application	undated

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Special projects : Decision tables			
Box 2	102726583	description IBM application program : IBM 1401 decision logic translator (1401-SE-05X) program reference manual	undated
Box 2	102726584	IBM Decision Table coding sheets	undated
Box 2	102726582	Report : define meaning of a table, major characteristics of condition area and condition area algorithms	undated
Box 3	102726592	Information process charting	1957-03-15
Box 3	102726593	Summary report : 39 frame systems project	1957-03-15
Box 3	102726595	Integrated Systems Project : main line to profit	1958
Box 3	102726597	Integrated Systems Project	1958-01-02
Special projects : Automated factory design			
Box 3	102726594	Report on second systems design meeting	1958-03-18
Box 3	102726598	Requisition edit sheet : Integrated Systems Project	1958-08-22
Box 3	102726596	General engineering laboratory : the integrated engineering information system	1958-12-23
Box 3	102726603	Fourth progress report on the Integrated Systems Project	1959-04
Box 3	102726602	Report : regeneration : an advanced concept for information systems design	1959-12-01
Box 3	102726601	Conference paper : a systems approach to integrated systems planning	1960-02-01
Box 3	102726600	The Integrated System Project at General Electric	1960-03-31
Box 3	102726588	Automated Design Engineering documents	1961-1962
Box 3	102726604	Automated Design Engineering project plan	1962-03-12

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
Special projects : Automated factory design			
Box 3	102726589	Present business description : an automated design engineering study for Leeds & Northrup Company	1962-05-01
Box 3	102726590	Reference manual : the survey and implementation of an Automated Design Engineering system	1963
Box 3	102726599	The concept and use of Decision Tables in engineering applications	1963-08-07
Box 3	102726591	Automated planning of manufacturing operations	1966-05
International Business Machines records : Research			
Box 3	102726617	Application system development method (ASDM) : common support systems folder	1977-1978
Box 3	102726622	Application system development method (ASDM) : DPD/WT-EMEA strategy plans folder	1977-1978
Box 3	102726618	Application system development method (ASDM) : EAS-E folder	1962; 1977
Box 3	102726621	Application system development method (ASDM) : IBM meeting	1977
Box 3	102726620	Application system development method (ASDM) : study of applications development technology	1978-09-22
Box 3	102726619	Application system development method (ASDM) : technical workshop folder	1977
Box 3	102726607	Applications directions '77 : scientific computing marketing handbook	1977-05
Box 3	102726605	Computer services department : 1975-1976 report	1976-10-20
Box 3	102726611	General marketing guidelines	1977-08
Box 3	102726606	IBM Research : West Coast trip	1977

	<u>Catalog Number</u>	<u>Title</u> folder	<u>Date</u>
International Business Machines records : Research			
Box 3	102726608	IBM Research folder	1975-1977
Box 3	102726613	IBM Research report : a system for the automation of almost-routine functions	1977-03-14
Box 3	102726616	Interactive programming/CMS aids folder	1977
Box 3	102726615	National computer conference folder	1976
Box 3	102726614	Office systems simulation folder	1972; 1974; 1977
Box 3	102726609	Soviet trip folder	1974; 1976-1977
Box 3	102726612	Speech filing system folder	1976-1977
Box 3	102726610	Unified systems of computers	undated
International Business Machines records : Study organization plan			
Box 3	102726625	Reference book : Study Organization Plan	1960
Box 3	102726623	Reference book : Study Organization Plan	1961
Box 3	102726630	Hughes El Segundo - IBM systems study preliminary report	1961-04-10
Box 3	102726624	Reference book : Study Organization Plan	1961-1962
Box 4	102726626	IBM data processing techniques : study : IBM Study Organization Plan : the approach	1963
Box 4	102726627	IBM data processing techniques documents	1963
Box 4	102726628	Study Organization Plan presentations	1963
Box 4	102726631	Promotional materials for Management Systems book	1968-1969
Box 4	102726629	Business systems folder	1975

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
International Business Machines records : General			
Box 4	102726634	Representation of an industrial processing system folder	1960
Box 4	102726632	The "explosion" operator as used in production control	1960-05-15
Box 4	102726640	IBM : general information manual : advanced analysis method for integrated electronic data processing	ca. 1960
Box 4	102726633	IBM personal folder	1962; 1964
Box 4	102726638	Judicial administration and the computer	1969-11
Box 4	102726639	IBM application brief : lawyers co-operative publishing company data entry and text processing using the System/360 text processor - PAGINATION/360 and Administrative Terminal System (ATS)	1971-05
Box 4	102726644	IBM program product : Storage And Information Retrieval System (STAIRS/VS), general information	1973-06
Box 4	102726643	IBM program product : Interactive Training System general information manual	1973-09
Box 4	102726635	Deposition re: Symbolic Control, Inc. vs. IBM	1973-1974
Box 4	102726642	IBM program product : Advanced Text Management System (ATMS) general information manual	1974-10
Box 4	102726636	The United States House of Representatives computer-based bill status system	1975-06
Box 4	102726641	Public computer news - flyer for Comput-O-Mat Systems	1976
Box 4	102726646	IBM organizational chart - scientific computing	1977-04-01

	<u>Catalog Number</u>	<u>Title</u>	<u>Date</u>
	International Business Machines records : General		
Box 4	102726645	Sun network (chart)	1977-04-15
Box 4	102726637	Program for IBM offices of the future symposium	1977-10