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THE WORLD BANK

Washington, D.C.

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The World Bank

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President Wolfensohn - Briefings Books for Presidents Meetings - Meeting Materials
William Bowen - Andrew W Mellon Foundation - February 7, 1997

DECLASSIFIED
WITH RESTRICTIONS
WBG Archives

Meeting: Mr. William Bowen
Andrew W. Mellon Foundation

Friday, February 7, 1997
11:00 a.m. - 12:00 p.m.
140 East 62nd Street (between 3rd & Lexington)
New York

Archive Management for the President's Office

Document Log

Reference # : Archive-01392

1997

Edit

Print

A. CLASSIFICATION

- ☒ Meeting Material
- ☐ Trips
- ☐ Speeches

- ☐ Annual Meetings
- ☐ Corporate Management
- ☐ Communications with Staff

- ☐ Phone Logs
- ☐ Calendar
- ☐ Press Clippings/Photos

- ☐ JDW Transcripts
- ☐ Social Events
- ☐ Other

B. SUBJECT: MEETING: MR. WILLIAM BOWEN, ANDREW W. MELLON FOUNDATION (CONFIRMED)
CONTACT: PAT WOODFORD @ 212-826-8114 // FAX: 212-750-1148
Brief Includes Memo to Mr. Wolfensohn from Joseph Ingram - February 5, 1997 "Mellon Foundation Journal Project" and tabs:
- JSTOR Web Site
- Participating Journals
- November 1996 JSTOR Update
- Your Note to Vinod, Meeting w/William Bowen
- JSTOR Brochure

DATE: 02/07/97

C. VPU

Corporate

- ☐ CTR
- ☐ EXT
- ☐ LEG
- ☐ MPS
- ☐ OED
- ☐ SEC/Board
- ☐ TRE

Regional

- ☐ AFR
- ☐ EAP
- ☐ ECA
- ☐ LAC
- ☐ MNA
- ☐ SAS

Central

- ☐ CFS
- ☐ DEC
- ☐ ESD
- ☐ FPD
- ☐ FPR
- ☐ HRO

Affiliates

- ☐ GEF
- ☐ ICSID
- ☐ IFC
- ☐ Inspection Panel
- ☐ Kennedy Center
- ☐ MIGA

D. EXTERNAL PARTNER

- ☐ IMF
- ☐ UN
- ☐ MDB/Other IO
- ☐ NGO
- ☐ Private Sector

- ☐ Part I
- ☐ Part II
- ☐ Other

E. COMMENTS:

File Location ☒ EXC ☐ IISC ☒ Archives	Cleared By	Date: 05/06/97
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 [View Update History](#)

OFFICE MEMORANDUM

DATE: February 5, 1997

TO: Mr. James D. Wolfensohn

FROM: Joseph Ingram, Acting Director, EDI

EXTENSION: 82046

SUBJECT: **Mellon Foundation Journal Project**

You asked Vinod to gather some more information on Mellon's JSTOR project prior to your visit with Mr. Bowen.

John Middleton contacted Bowen's office. In addition to the materials sent to you earlier, they have provided an overview of their Website and a list of journals participating in the project as of last week. These materials, and your original incoming documents, are attached.

In reviewing the Website, we learned that, under agreements with publishers, JSTOR provides access only to journal runs that are *at least three years old*. As a subscription service, this will still be helpful to part II universities. It could help the Bank libraries reduce their physical storage space -- but it wouldn't be of much help in keeping Bank staff up to date.

cc: Messrs. Vinod Thomas (o/r), John Middleton

Attachment

Guide to JSTOR Web Site

<http://www.jstor.org/>



Our web site is designed both to introduce our service, and to provide ongoing updates to libraries, publishers and users who are already familiar with JSTOR. You can access JSTOR's web site with any browser by entering the address shown above. Once you receive our homepage, simply place your cursor over one of the three icons on the central page and click on the desired option. You will not be able to "Enter JSTOR" unless you are affiliated with a JSTOR participating institution, but you can read "About JSTOR" or get "Help." To try the demo, click on the "Demonstration Database" link which can be found at the bottom of the web page.

In addition to information about how we began, where we are presently, and future directions, we provide access to a sample archive of journal literature that can be searched by anyone. This Demonstration Database contains early years of the following journals in which a user can conduct a search using JSTOR's specially developed user interface and search engine:

The American Economic Review
The American Political Science Review
The William and Mary Quarterly

Here is a quick summary of the links available in About JSTOR:

The Need - Information on the development and background of electronic publishing and the pressures facing libraries today.

Background - The history of JSTOR.

JSTOR Mission and Goals

JSTOR-Phase I Pricing and Availability

JSTOR Classifications - JSTOR's methodology in classifying institutions for pricing purposes.

Currently Available JSTOR Content - List of journals currently available in JSTOR.

The JSTOR Production Process - A description of the process, from negotiation of a license agreement, to the announcement that the journal is available for users through JSTOR.

Titles in Progress - Journals currently in the production stage.

Future Titles and Fields - Journal titles and academic fields to be included in our database.

Publisher License Terms - Highlights of JSTOR's Publication License.

Library License Terms - Highlights of JSTOR's Library License, as well as the full agreement.

Individual Subscriptions

Why Images? - Information on image and text-based databases.

Participating Journals
(Listed by Field - As of February 1997)

Economics:

American Economic Review
 Econometrica
 Journal of Applied Econometrics
 Journal of Economic History
 Journal of Economic Literature
 Journal of Economic Perspectives
 Journal of Industrial Economics
 Journal of Political Economy
 Quarterly Journal of Economics
 Review of Economics and Statistics
 The Economic Journal

Finance:

Journal of Money, Credit and Banking

Mathematics:

Annals of Mathematics
 Journal of the American Mathematical Society
 Mathematics of Computation
 Proceedings of the American Mathematical Society
 SIAM Journal on Applied Mathematics
 SIAM Journal on Numerical Analysis
 SIAM Review
 Transactions of the American Mathematical Society

Population/Demography:

Demography
 Family Planning Perspectives
 International Family Planning Perspectives
 Population and Development Review
 Population Index
 Studies in Family Planning

Philosophy:

Journal of Philosophy

Political Science:

American Political Science Review
 World Politics
 The Journal of Politics

History:

American Historical Review
 Journal of American History
 Journal of Modern History
 Renaissance Quarterly
 Speculum
 The Journal of Military History
 William and Mary Quarterly

Sociology:

Annual Review of Sociology
 American Sociological Review
 Contemporary Sociology: a Journal of Reviews
 Journal of Health and Social Behavior
 Sociology of Education
 Social Psychology Quarterly

Ecology:

Annual Review of Ecology and Systematics
 Ecological Applications
 Ecological Monographs
 Ecology

Higher Education:

Journal of Higher Education

Asian Studies:

Journal of Asian Studies

Library Charter Participants

Boston College
 Bryn Mawr College
 Columbia University
 Dartmouth College
 Denison University
 Duke University
 Georgetown University
 Harvard University
 Haverford College
 Johns Hopkins University
 Michigan State University
 New York University
 Princeton University
 Russell Sage Foundation
 University of Chicago
 University of Delaware
 University of Florida
 University of North Carolina at Chapel Hill
 University of Pennsylvania
 University of Toronto
 Villanova University
 Williams College



JSTOR-PHASE I PRICING *and* AVAILABILITY

JSTOR will provide the complete runs of a minimum of 100 important journal titles in 10-15 fields within 3 years. We are calling this collection JSTOR-Phase I. In the future, we expect that there will be additional phases of JSTOR that will include clusters of journals in specific fields. These later phases of JSTOR will be independent of Phase I.

JSTOR's focus is on becoming a trusted archive. We do not publish current issues of the journals. Current issues represent journal publishers' main, if not only, revenue stream, and it is not the purpose of JSTOR to put that revenue at risk. We believe it is possible to work with publishers in a complementary way that will be to everyone's benefit. In our agreements with publishers we have established a lag period, which we call the "moving wall", that defines the point at which the JSTOR archive stops, and "current" issues start. In some cases, the moving wall is three years (meaning the last issue available in the JSTOR archive would be one published three years ago); in other cases it is five years. In any event, as each year passes, another year is added to the archive, thus guaranteeing that the archive is being constantly updated and refreshed.

For publishers that are beginning to publish current issues in electronic formats, we are working to establish technological linkages that will make it possible for users to search seamlessly from the current issue right back through the first issue in the JSTOR archive.

All academic institutions are being offered site licenses permitting access to the Phase I archive on campus networks. These licenses vary in cost based on key characteristics of the participating library/institution.

There are two types of payment:

1. A **One-time Database Development Fee**, for permanent access rights to the information in Phase I;
2. An **Annual Access Fee**, to help cover the recurring costs of updating and maintaining the archive. Updating will include the addition of successive years of material for the Phase I journals (via the moving wall). Access fees will be fixed for the first three years of participation at the rates shown below.

JSTOR will be launched officially on January 1, 1997.

Prices

	Large	Medium	Small	Very Small
Database Development Fee	\$40,000	\$30,000	\$20,000	\$10,000
<i>Price per journal title*</i>	\$400	\$300	\$200	\$100
Annual Access Fee	\$5,000	\$4,000	\$3,000	\$2,000
<i>Price per journal title</i>	\$50	\$40	\$30	\$20

* The price per journal is illustrative only. JSTOR does not offer Phase I journals on a title-by-title basis.

Special Prices for Charter Participants

As an incentive for institutions to make early commitments to participate in JSTOR, we are offering Charter Libraries a 25% discount from the standard fees. All entities that sign JSTOR License Agreements prior to April 1, 1997 will receive the Charter rates. As a further incentive, charter participants will also be eligible for similar discounts on later phases of JSTOR as they are available.

	Large	Medium	Small	Very Small
Database Development Fee	\$30,000	\$22,500	\$15,000	\$7,500
<i>Price per journal title*</i>	\$300	\$225	\$150	\$75
Annual Access Fee	\$3,750	\$3,000	\$2,250	\$1,500
<i>Price per journal title</i>	\$37.50	\$30	\$22.50	\$15

* The price per journal is illustrative only. JSTOR does not offer Phase I journals on a title-by-title basis.

Consortia

JSTOR is not offering further discounts to consortia beyond the 25% charter pricing. As a not-for-profit organization, JSTOR has set prices for access to the database as close to its costs as possible, while providing assurance of long-term viability.

Unlike many other "products", JSTOR did not start out with a single price for all participants, which might then be discounted to consortia. By offering different prices for different classes of institutions, an effort was made from

the beginning to establish pricing that would distribute the costs of the endeavor in a fair way over as many institutions - and types of institutions - as possible.

[About JSTOR](#) | [JSTOR Classifications](#)

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Contact jstor-info@umich.edu.

The World Bank
Washington, D.C. 20433
U.S.A.

JAMES D. WOLFENSOHN
President

January 27, 1997

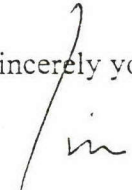
Mr. William G. Bowen
The Andrew W. Mellon Foundation
140 East 62nd Street
New York, NY 10021

Dear Bill,

Thank you for your note of January 16th. I will most assuredly call you when next in New York. I have a terrible schedule through to the end of February, but thereafter I will get in touch. I am particularly anxious that we learn more about what you are doing in JSTOR.

Warmest wishes,

Sincerely yours,



James D. Wolfensohn

cc: Mr. V. Thomas

THE ANDREW W. MELLON FOUNDATION

140 EAST 62ND STREET

NEW YORK, N. Y. 10021

(212) 838-8400

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MAY 27 2025

WBG ARCHIVES

OFFICE OF THE PRESIDENT

PERSONAL

January 16, 1997

James D. Wolfensohn, President
The World Bank
1818 H Street, NW E1227
Washington, D.C. 20433

Dear Jim:

I enjoyed so much seeing you last night at the Institute dinner in New York. Your emphasis on education as the key to development and progress seems exactly right to me. And, for all the reasons we discussed, I am convinced that the use of electronic technologies creates a vast array of opportunities that did not exist before.

I continue to hope that the Mellon Foundation, JSTOR, and The World Bank can work together to achieve what are clearly common ends. I was delighted to hear you say that you would come to our office here on 62nd Street the next time that you are in New York. That would provide an opportunity for us to show you directly what JSTOR is and how it works. I think you would enjoy seeing JSTOR, and I believe that through some first-hand contact with it, even a brief contact, you will understand better its potentialities. I will ask my office to be in touch with your office in concerning logistics.

Meanwhile, I enclose a sheet indicating the kinds of journals that we anticipate will be included in JSTOR Phase-I. Overall, as I said, we expect to have 100 journals in the database within two years.

With best wishes,

Sincerely,


William G. Bowen

WGB:n

Participating Journals
(Listed by Field - As of December 1996)



Economics:

American Economic Review
Econometrica
Journal of Economic Literature
Journal of Economic Perspectives
Journal of Industrial Economics
Journal of Political Economy
Quarterly Journal of Economics
Review of Economics and Statistics
The Economic Journal

Finance:

Journal of Money, Credit and Banking

Mathematics:

Annals of Mathematics
Journal of the American Mathematical Society
Mathematics of Computation
Proceedings of the American Mathematical Society
SIAM Journal on Applied Mathematics
SIAM Journal on Numerical Analysis
SIAM Review
Transactions of the American Mathematical Society

Population/Demography:

Demography
Family Planning Perspectives
International Family Planning Perspectives
Population and Development Review
Population Index
Studies in Family Planning

Philosophy:

Journal of Philosophy

Political Science:

American Political Science Review
World Politics

History:

American Historical Review
Journal of American History
Journal of Modern History
Renaissance Quarterly
Speculum
The Journal of Military History
William and Mary Quarterly

Sociology:

Annual Review of Sociology
American Sociological Review
Contemporary Sociology: a Journal of Reviews
Journal of Health and Social Behavior
Sociology of Education
Social Psychology Quarterly

Ecology:

Annual Review of Ecology and Systematics
Ecological Applications
Ecological Monographs
Ecology

Higher Education:

Journal of Higher Education

Asian Studies:

Journal of Asian Studies

Library Test Sites

Bryn Mawr College
University of Chicago
Denison University
University of Delaware
New York Public Library
Swarthmore College
Stanford University
University of California
Berkeley
Yale University
Cornell University
Columbia University
Emory University
Haverford College
Princeton University
University of Texas at Austin
University of Wisconsin
Williams College
Harvard University
Center for Advanced Study in
the Behavioral Sciences

Contact → 212-826-8114.

The World Bank
Washington, D.C. 20433
U.S.A.

JAMES D. WOLFENSOHN
President

November 11, 1996

Mr. William G. Bowen
The Andrew W. Mellon Foundation
140 East 62nd Street
New York, NY 10021

Dear Bill,

I am fascinated by your project of JSTOR which clearly could be of enormous interest in Africa. My problem is that we are almost totally down to support activities outside the country and I fear that assisting you in a domestic initiative is unlikely to be possible. Nevertheless, I would be very happy to see you and to try and see if we can become creative in some way. If I can not do something through the Bank, I may at least be able to make a modest contribution myself. I have asked my assistant, Allison Tsatsakis, to try and set up a date as soon as my travels permit. You should understand, however, that in the month of November I think I am in the country for four days only and in December maybe only for seven.

With warmest good wishes,

As ever,


James D. Wolfensohn

C.C. Information Team



Record Removal Notice

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Document Date April 24, 1997	Document Type Facsimile			
Correspondents / Participants To: Allison Tsatsakis From: William G. Bowen, President, The Andrew W. Mellon Foundation, and Chairman, Board of Trustees, JSTOR				
Subject / Title Privileged and Confidential - JSTOR Update				
Exception(s) Information Provided by Member Countries or Third Parties in Confidence				
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Withdrawn by Diego Hernández	Date April 30, 2025			

The World Bank
Washington, D.C. 20433
U.S.A.

JAMES D. WOLFENSOHN
President

January 27, 1997

John

We spoke

Thank, again

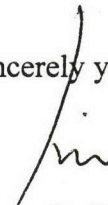
Vinod

Mr. Vinod Thomas
Room No. M-7051
The World Bank

Dear Vinod,

I recently saw William Bowen, who is the President of the Mellon Foundation. As you may know, they help putting a large number of journals on line and, no doubt, this will be a great service to us. I promised to go and see Bill, but if you could call him and arrange to get some additional information before I visit him, I would appreciate it very much.

Sincerely yours,


James D. Wolfensohn

Encl.

He was formerly President
of Princeton University -

FAX

President's Office, The World Bank
Washington, D.C.

CONFIRMATION OF APPOINTMENT

Date 1/31/97

Number of pages including cover sheet 1

To: MS. PAT WOODFORD

For: MR. WILLIAM G. BOWEN

THE ANDREW W. MELLON

FOUNDATION

Fax Number 212-750-1148

CC: JDW / V. THOMAS/
M. MEREDITH

From:

Allison Tsatsakis,
Executive Assistant,
Scheduling

Phone 202-458-4776

Fax Phone 202-522-3031

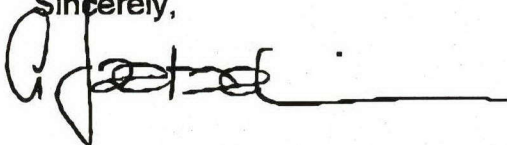
REMARKS:

Dear Pat,

Per our conversation, this is to confirm the appointment for Mr. Wolfensohn with Mr. Bowen, scheduled for Friday, February 7 from 11:00 a.m. to 12:00 noon, at Mr. Bowen's office (The Andrew W. Mellon Foundation, 140 East 62nd Street, New York).

Please call me if I can be of any further assistance.

Sincerely,





Sarah E. Sully
General Counsel and
Director of Publisher Relations

188 Madison Avenue, New York, NY 10016

TEL 212 592.7345 FAX 212 592.7355

ss@jstor.org



HISTORY AND BACKGROUND

Reprinted from the 1995 Report of
THE ANDREW W. MELLON FOUNDATION

Of the many initiatives sponsored by the Mellon Foundation in recent years, the JSTOR ("journal storage") project has proved to be particularly intriguing—and, we believe, particularly promising. By reconciling the sometimes competing interests of scholarly associations, other publishers of scholarly journals, libraries, and individual users of journal literature, JSTOR offers the exciting prospect of dramatically improved access to scholarly materials for faculty and students, reductions in capital and operating costs for libraries, and greater long-term financial stability for publishers.

Claims for the "revolutionary" promise of new technologies are often wildly exaggerated, but this seems to be one instance in which the well-orchestrated application of technologies that are broadly available can make an enormous difference. In this "update," we hope to provide a context for understanding the current status of the project, a summary of new directions, and likely next steps—including the possibility that a prototype database will be available to charter subscribers by the end of 1996.¹

Background and current status of the project

Initiated as a demonstration project in the spring of 1994, JSTOR began as an effort to ease the increasing problems faced by libraries seeking to find appropriate stack space for the long runs of back issues of scholarly journals. The basic idea was to

¹ This description of JSTOR's continuing evolution, spanning its existence during 1995 as both a demonstration project of the Foundation and, in the second half of the year, a separately incorporated entity, is written jointly by William G. Bowen, Chairman of the Board of JSTOR, and Kevin M. Guthrie, its Executive Director. For more detailed descriptions of many of the issues mentioned below, see Bowen's paper titled "JSTOR and the Economics of Scholarly Communication" presented at the Council on Library Resources conference held in Washington, DC (October 1995) and Guthrie's companion paper presented at a meeting of the Chief Administrative Officers of the American Council of Learned Societies held in Kansas City, MO (November 1995). Both of these papers may be obtained on request (or can be accessed via the World Wide Web at <http://www.mellon.org/jstor.html>).

convert the back issues of the paper journals into electronic formats that would allow savings in capital costs while simultaneously improving access to the contents of the journals and addressing preservation problems. In August 1994, the Foundation appropriated \$700,000 to the University of Michigan to develop software and purchase computer hardware that would allow bitmapped images of journal literature to be accessed over computer networks. In December 1994, the Foundation appropriated an additional \$1,500,000 to Michigan to support scanning of pre-1990 issues of ten core journals in history and economics (approximately 750,000 pages in all).

This project has been far more complicated to implement than expected; indeed, as one of us has said on other occasions, if we had known at the outset all that we know now, we might not have marshaled the courage to begin! One experienced observer of both the academic and business worlds said, following his participation in a recent meeting of the 12-person team at Michigan working on the JSTOR "production" cycle, that he had never seen a simple concept that was so complex in its implementation.

To give just one example, we were surprised to learn that a number of long-lived journals lack accurate records of their own runs. Over the years, supplementary issues have been published from time to time, issues have sometimes been skipped, and there have even been errors in numbering (for example, two issues numbered "four" can appear in the same year). Thus, it was difficult to know when we had in fact succeeded in bitmapping the full run of a journal, since there was no known definition of the full run at the outset. An unanticipated contribution of JSTOR has been to provide, for the first time in some instances, a complete publication record for particular journals, with an accurate index of all articles, reviews, and other materials they contain. This laborious process of assembling and checking the "raw material," as well as the bitmapped images, has necessitated a heavy investment in quality control. More generally, the flow chart now used to monitor progress in converting paper issues of back files into the final electronic database involves more than 30 distinct cells, some with their own subsets of instructions!

Complications notwithstanding, we have now accomplished our original objective: electronic replications of all of the pre-

1990 issues of the ten economics and history journals chosen to begin the project are now incorporated into the JSTOR database. Bitmapped images of every published page are linked to a text file generated with optical character recognition (OCR) software which, along with newly constructed indexes, allow for complete search and retrieval of the published material. The database is being used at the first five college test sites (Bryn Mawr-Haverford-Swarthmore Colleges, Denison University, and Williams College), as well as at the University of Michigan, Harvard University, and the Center for Advanced Study in the Behavioral Sciences.

In all essential respects, JSTOR works—and, indeed, works very well. In particular, the decision to scan the pages at high resolution (600 dots per inch) has proven to be sound; the images are of truly archival quality, and even the most complicated figures and equations can be printed beautifully (provided that the right printer applications are used in conjunction with the specified printers). Users can perform full-text searches on the database as well as searches by abstract, author citation, and article title. Also, they have the convenience of being able to access the journals using standard PC equipment at any time (this “library” never closes) and from any location that can access a campus network. Issues of journals are never “out,” and are always available in pristine condition. In sum, the addition of these powerful search and printing capabilities makes the JSTOR system much more than just a way for libraries to save capital costs; it has become a scholarly tool of enormous value.²

² The database also permits ego gratification: an author can search on his or her name and find all the “hits” in the database, including not only the author’s own publications, but also book reviews, citations in other articles, and even mentions in advertisements. One friend of ours was very pleased with himself when he found his name mentioned 180 times. In order to put his considerable accomplishments in perspective—and ensure a modicum of humility—we then did a full text search for the name of a great teacher of one of us, Jacob Viner. In the ten journals in economics and history that currently comprise the database, there were 3,529 hits! Since Viner wrote on a wide variety of subjects, from the influence of Adam Smith to the role of customs unions in international trade, it is also convenient to couple Viner’s name with whatever topic is of special interest to the user, thereby constraining the search in appropriate ways and producing a manageable list of hits. Similarly, searches can be limited to articles published before or after a certain date, or to articles published only in specified journals. Once the desired reference has been found, the search engine takes the user to the exact page of the hit, not just to the beginning of the article in which the hit occurs.

These accomplishments duly noted, those of us who have been closest to JSTOR are more aware than anyone else of the many respects in which it can be improved. Work is ongoing to replicate the database at another site, to test the feasibility of a score of technical enhancements, and to experiment with adding Standard Generalized Markup Language (SGML) tags to at least some back issues (to permit more structured searches and the use of hypertext links). JSTOR is committed to remain up-to-date, to continue to take advantage of advances in electronic technologies, and not to allow itself to "ossify" in a highly technical field that continues to change at a dizzying pace.

The most important open questions are by no means solely technical. Studies are being made of the ways in which JSTOR affects the way readers use journals and, by extension, the very process of scholarly communication. (For example, given access to the highly convenient search capabilities of JSTOR, will students, as well as faculty members, make fuller use of older journal literature?) Work is also underway on the development of viable economic models which will assure cost-effective access for users while protecting the revenue streams of publishers and allowing JSTOR to recover its costs.

New directions for JSTOR in 1995

Three substantive decisions concerning future directions for JSTOR were made during 1995: (1) to include more fields and more journals; (2) to "roll out" the database to an unlimited number of sites; and (3) to explore linking current issues to back-files. Taken together, these judgments drove another decision, already noted, that was organizational in character: to preserve JSTOR's nonprofit status, but to separate it from the Mellon Foundation.

1) *More fields and more journals.* There was never any reason, and never any intention, to include only the fields of economics and history in JSTOR. These fields were useful starting points, but it was evident from the beginning that one of the major advantages of the JSTOR concept is that it allows scholars, and particularly those interested in topics that span disciplines, to search for materials within a number of related fields simultaneously. For example, two topics now being investigated by staff members at the Foundation—the nature and conse-

quences of affirmative action policies in college admissions and the changing role of intercollegiate athletics in American higher education—require searches of journal literature in a wide variety of fields, including economics and history, but by no means limited to these fields alone.³

One of the nicest compliments paid to JSTOR is that, as the great potential of the project became ever more evident, scholars from many disciplines urged us to add journals—almost always in “their” fields! Some urged us to add leading journals in fields adjacent to history and economics, such as political science, sociology, finance, and area studies. And we agree that there is much to be said for assembling “clusters” of related fields. Others argued out that we should include fields, such as mathematics, which are important in and of themselves and are also relevant to scholars in other disciplines.⁴ Finally, colleagues at the Foundation made the obvious point that it was odd, and even awkward, for the Foundation to appear to ignore journal literature in fields in which it continues to be an active grantmaker. Ecology, population studies, various fields within the humanities (art history, philosophy, literary criticism, and classics, among others), and higher education all come to mind immediately.

Once we had convinced ourselves, and others, that JSTOR worked, expanding the database along the general lines just suggested made eminently good sense. In considering other journals, we have been avowedly opportunistic, since we did not believe that there was any single “right” way to proceed. Our experience has taught us that there is much to be said for assign-

³ Even working within the confines of just these two fields, we found a number of articles that we would have missed absent the search capabilities of JSTOR. To give but one illustration, we found an item from a section in the 1987 volume of the *Journal of Political Economy* entitled Miscellany that reported the results of a sophisticated analysis by researchers at Clemson of the effects of competitive success in big-time athletics on the SAT levels of incoming students. It is highly unlikely that we ever would have learned about this article without JSTOR.

⁴ Interestingly, contrary to what some people assume, mathematics is a strongly historical field. Mathematicians are very interested in problems posed and proofs attempted decades ago (see, for example, the continuing interest in Fermat’s Last Theorem).

ing highest priority to fields, and to publishers, that evince a strong belief in the JSTOR concept and genuinely want to work with us in a partnership mode.

Conversations are now underway with publishers in a number of fields. We expect that, as time and circumstances allow, we will add fields, and journals within existing fields, to the initial JSTOR database. To cite just two examples, agreements have already been signed to include the *Annals of Mathematics* and the three journals published by the Ecological Society of America. Also, we would like to include leading journals published outside the United States.

2) “Rolling out” JSTOR to an unlimited number of sites. The responses to date of JSTOR users (including those who have attended demos as well as those at the test sites) have been extremely positive. Representatives of the library community have also been enthusiastic advocates of JSTOR. These expressions of support have led us to conclude that we should begin now to plan for general access by authorized users to at least the backfiles of an initial set of journals. In short, we are committed to making the transition from an initial test phase of the project to an ongoing operation. It is encouraging to report that we have already received commitments from the American Economic Association, the Econometric Society, the American Historical Association, the Ecological Society of America, and the publisher of the *Annals of Mathematics* to make the backfiles of their journals available through JSTOR at an unlimited number of sites.

Presuming that agreement as to how to proceed can be reached with the rest of our initial publishing partners, and with other publishers, we hope that it will be possible to have some number of core journals ready to “roll out” to libraries and other subscribers by the fall of 1996. But we also recognize that much work remains to be done, and that this schedule could prove to be overly ambitious. In addition to working with publishers and continuing to make technical improvements to the database, it will be necessary to define an initial set of relationships with subscribers, which will have to include agreements on subscription prices (since JSTOR must recover its costs) and proper means of

authorizing and restricting access to relevant parts of the database.⁵

3) *Linking current issues to the backfiles.* A third major decision made during 1995 was to extend the initial conception of JSTOR in one major respect. As we came to appreciate its capabilities more fully, it became obvious that there was no fundamental reason to focus solely on backfiles (if one is prepared to address the complicated questions concerning pricing and revenue streams, which the inclusion of current issues presents). There are evident benefits to all parties in linking electronic archives of backfiles to electronic versions of current issues of the same journals. Such an arrangement would allow users to search the entire run of a journal, from the most recent issues back to the earliest ones, using common software. For both users and libraries, this approach would also solve the problem of how to update the historical archive, since updating would occur annually and automatically if linking were achieved. Moreover, libraries would have the option of avoiding the costly and sometimes arduous process of binding current issues and then finding space for them in the stacks.

Publishers can also benefit in significant ways, as they seek to make a smooth, affordable, and timely transition to the fast-moving world of electronic publication. For those scholarly associations and other publishers that have not yet invested in developing the technology and infrastructure to build and maintain electronic versions of their journals, JSTOR offers the opportunity to take full advantage of years of development by a nationally recognized team at the University of Michigan. In addition, through participation in JSTOR, publishers can gain assistance in distributing their journals in electronic form to authorized subscribers (libraries and individuals) and learn from others which pricing models and restrictions on access work best in pro-

⁵ Back-of-the-envelope calculations suggest that it will be possible to recover costs without imposing high charges. But much will depend on the level of interest by potential subscribers, since the economies of scale are so great. For some illustrative calculations, see Bowen's paper on "JSTOR and the Economics of Scholarly Communication." As that paper suggests, we believe that JSTOR will offer considerable savings to libraries, when they take account of storage costs and the costs of providing access to paper copies.

tecting revenue streams. Over time, we expect participating publishers to be able to reduce distribution and inventory costs.

Moreover, we are optimistic that JSTOR will increase the attractiveness of the participating journals to libraries and scholars worldwide, both those that currently subscribe to the paper version and those that do not. For the current subscribers, there are the many benefits of the JSTOR database previously discussed (including cost savings for libraries and the powerful search engine). In addition, many of the members of the second group—those that are not current subscribers—may lack the space and infrastructure to process and store paper copies of journals, but would benefit and might choose to subscribe if offered convenient and affordable electronic access.

The Ecological Society of America (ESA) was a major partner in the decision to develop mechanisms for linking current issues to backfiles. The leadership of the Society expressed strong interest in entering into such an arrangement with JSTOR, and agreement has now been reached on an experimental plan to link electronic versions of current issues of the Society's three journals (including its main journal, *Ecology*) to the electronic backfiles. Other publishers have expressed strong interest in similar arrangements, and discussions are ongoing. To be sure, there are complex technical, economic, and administrative problems to be addressed, and it almost certainly will take longer to work out these problems to everyone's satisfaction than it will to move ahead with the backfiles alone. But we are persuaded that linkage is the right approach, and that it is, in fact, likely to prove to be an inevitable consequence of the technical possibilities associated with digitization.

Creation of a new not-for-profit entity

The major organizational decision of the year—to locate JSTOR within a separate, self-contained not-for-profit entity—was based on our recognition of the rapidly increasing complexity of the project, its great potential, and the need to demonstrate sooner, rather than later, that JSTOR can be self-sustaining. The interrelated decisions to add fields, to make JSTOR widely available without undue delay, and to explore linking current issues to the backfiles, combined to give urgency to this change. On July 31, 1995, the new JSTOR entity was incorporated, and in

January 1996 it received a tax ruling classifying it as a 501(c)(3) Public Charity. At this writing, JSTOR is still being "incubated" at the Foundation, but it is expected to move into its own space at the New York Public Library's new Science, Industry, and Business Library later this spring.

As a not-for-profit entity, JSTOR is prohibited by law from accumulating funds beyond its legitimate needs, and, in any case, it would have no interest in doing so. Its sole purpose is to serve the scholarly community by increasing the availability of scholarly journals and enhancing their usefulness, while concurrently reducing library costs. In these respects, the posture of JSTOR differs fundamentally from that of commercial vendors. Unlike commercial entities, the test of success for JSTOR is not merely the proverbial "bottom line," but how well it facilitates teaching and scholarship by improving the mechanisms of scholarly communication. JSTOR works in concert with publishers as well as with libraries and the scholarly community at large, as it seeks to advance the common interests of all parties. It operates on the premise that it is only by adopting a "system-wide" perspective, which recognizes the legitimate needs of *both* the providers of scholarly materials and their users, that socially optimal arrangements can be put in place.⁶

At the same time that it is appropriate to emphasize the broad social and even philanthropic objectives of JSTOR, it is no less important to recognize that fiscal discipline is essential. The Trustees of the Foundation have always believed that JSTOR would have to be self-sustaining eventually. Perpetual subsidy

⁶ In creating the founding Board of Trustees of JSTOR, care was taken to assemble a group of individuals who would be known and respected by the scholarly community broadly defined—in part to assure credibility from the outset. The founding Trustees of JSTOR include: Richard De Gennaro, Librarian of Harvard College; Mary Patterson McPherson, President of Bryn Mawr College; Cathleen Synge Morawetz, Professor of Mathematics, New York University, and President of the American Mathematical Society; Gilbert R. Whitaker, Jr., Provost Emeritus and Professor of Business Economics at the University of Michigan; and R. Elton White, former President of the NCR computer company and Trustee of Berea College. In addition, as noted earlier, two members of the Foundation's board (William G. Bowen and W. Taylor Reveley, III, a distinguished attorney from Richmond, Virginia, who has wide experience with nonprofit organizations) also serve on the board of JSTOR.

would be both unrealistic and unwise: projects of this kind must make economic sense once they are up and running. If users and beneficiaries, broadly defined, are unwilling to cover the costs, one should wonder about the utility of the enterprise. In this important respect, we are strong believers in "market-place solutions"—provided that what economists call "externalities" can be captured.

JSTOR will, of course, need to receive subscription revenue in order to cover its costs, which we believe is an achievable goal once a proper scale of operations is attained. It is hoped—though, again, there are no guarantees—that the appropriation of \$1.5 million for working capital approved by the Trustees of the Foundation in December will be sufficient to allow JSTOR to become self-supporting within roughly two years.

Finally, a word about staffing. The effective staffing of JSTOR is obviously critical to its success. At their first meeting in July, the Trustees of JSTOR elected Kevin M. Guthrie to the position of Executive Director.⁷ JSTOR has also retained the interest and commitment of Ira Fuchs, who serves as Chief Scientist of JSTOR while remaining Vice President for Computing and Information Technology at Princeton. Richard De Gennaro, who will retire as Librarian of Harvard College at the end of August 1996, has also agreed to work with Mr. Guthrie and Mr. Fuchs in the further development of JSTOR. It remains only to express our personal thanks to colleagues at the University of Michigan (especially Dan Atkins, Randy Frank, Wendy Lougee, Spencer Thomas, Kristen Garlock and Sherry Piontek) who continue to work so hard on the vast array of technical and library-related aspects of JSTOR.

* * * * *

In thinking about the future of JSTOR, we believe that we are still at the beginning of an enterprise that is full of promise,

⁷ An additional comment by William Bowen: Kevin Guthrie has excellent credentials for this assignment, with an undergraduate degree in engineering, a master's degree in business, practical experience running a small software company which he founded, and direct involvement with JSTOR from its earliest days. Most recently, Mr. Guthrie has been a Research Associate at the Foundation, studying the economics of nonprofit organizations, and he is the author of a recently published Jossey-Bass book, *The New-York Historical Society: Lessons From One Nonprofit's Long Struggle for Survival*.

as well as replete with questions. It is also an enterprise that is seeking to operate within a rapidly changing environment. At this juncture, no one can predict the eventual outer boundaries of JSTOR, or whether, at some date, it will take on even broader functions itself or become part of another organizational structure with an even more ambitious scholarly mission. Under present circumstances, the appropriate "rules of the road" appear to be: proceed with all deliberate speed, but with at least one eye open for opportunities not even dimly perceived now.

In our work to date, we are grateful for the extraordinary help rendered by so many thoughtful people. We hope that JSTOR can continue to count on our many friends, and especially our friendly critics, for advice. Jacob Viner, the distinguished economist and discerning observer of academia cited earlier, was fond of reminding his students as well as his colleagues: "There is no limit to the amount of nonsense one can propound, when one thinks too long alone."

William G. Bowen
Kevin M. Guthrie
March 1996

JSTOR

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VOLUME 122 NO. 2

ISSN 0363-0277

LIBRARY JOURNAL

FEBRUARY 1, 1997

JSTOR

THE JSTOR SOLUTION

Accessing and Preserving the Past

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**Polarized Perceptions:
Librarians vs. the Public**

**COLLECTION DEVELOPMENT
Home Improvement**

**IN THE BOOK REVIEW
Christian Fiction**

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**Kevin M. Guthrie (l),
JSTOR, and
Wendy P. Lougee,
University of Michigan
Library**

Doing more than just saving money, space,
and academic journals

THE JSTOR SOLUTION

Accessing and Preserving the Past



By Kevin M. Guthrie & Wendy P. Lougee

THE BASIC IDEA for JSTOR was inherent in a question William G. Bowen, president of the Andrew W. Mellon Foundation, asked the librarians at his alma mater, Denison University. Because of growing collections, that library was forced to consider building a \$5 million extension. Over a quarter of the stack space was to be filled with older, little-used academic journals and government docu-

ments. Wasn't there some way, Bowen queried, to convert these materials to electronic formats and thus save shelf space?

Like Denison, many an academic library grappled with the Scylla and Charybdis of access and preservation during the 1970s and 1980s. In light of dire predictions for print publications on acid paper, should access be restricted to prolong the shelf life of volumes? Would the scholarly community settle for inconvenient formats such as microform, which promise longevity of content? Managing and ensuring usability of rapidly growing collections and responding to the emerging data on collection deterioration presented dual challenges in an era of eroding campus budgets. The situation begged for compromise.

Slowed growth in collection budgets and serials pricing crises forcibly constrained the growth rate of library collections during the 1990s. Nevertheless, many

libraries were forced to consider more economical solutions to collection storage.

The promise of technology

As early as 1974, over half of the Association of Research Libraries (ARL) members had planned remote storage projects, despite user objections of diminished access. Even though these closed-access facilities promised to maintain vulnerable volumes in controlled environments, scholars complained that the ability to browse older materials was lost. Coupled with poor indexing for historical serial literature and non-existent access tools, the end result was often reduced access in the name of preservation needs and limited budgets.

Information technologies could release historical collections from these physical and economic constraints. Conversion techniques allow faithful replication of original materials, and search systems offer the benefits of enhanced retrieval. Digital collections not only provide the option of anytime/anyplace access but also the promise of productivity gains for the library and scholar com-

munities alike, as the labor-intensive tasks of maintaining and using physical collections are reduced dramatically. Despite uncertainties regarding long-term preservation of digital media, in *Preserving Digital Information: Report of the Task Force on Archiving Digital Information* (Commission on Preservation and Access, 1996), Donald Waters and John Garrett are optimistic that migration strategies will be developed.

JSTOR is established

JSTOR (short for Journal STORAGE), a not-for-profit organization located in New York City, was established to take advantage of these digital technologies to preserve and make accessible core journal literature. In pursuing this broad mission, JSTOR is committed to balancing the sometimes conflicting needs of all the stakeholders in scholarly communication—libraries, scholars, and publishers.

As it turned out, no one else seemed to be asking Bowen's apparently simple question (at least not for these materials), nor was anyone else pursuing its answer. Working with Ira Fuchs, the chief technology officer at Princeton University (and a cofounder of one of the original academic networks, BITNET), Bowen and the Mellon Foundation set out to find a collaborator to help build a database of the backfiles of important journals.

The University of Michigan's (UM) digital library group was selected because of its work on TULIP (The University Licensing Project). TULIP was a five-year collaboration between publisher EI-

Kevin M. Guthrie is Executive Director, JSTOR. Wendy P. Lougee is Assistant Director for Digital Library Initiatives, University of Michigan Library, Ann Arbor

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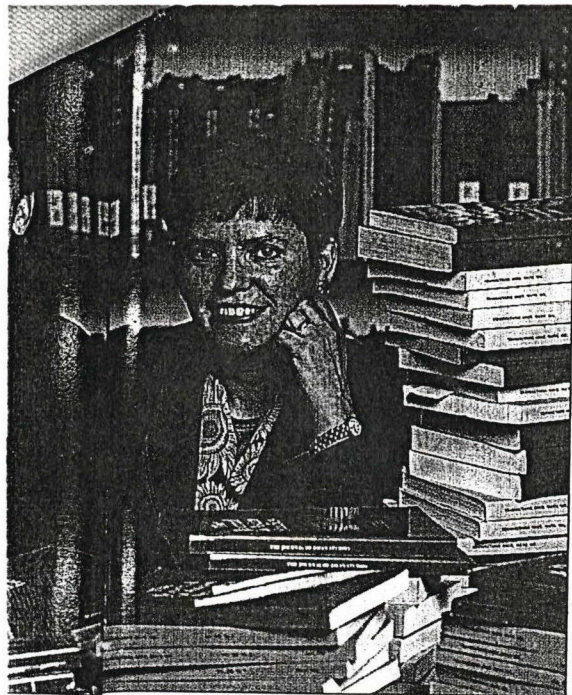


PHOTO BY CHIP WILLIAMS

In the thick of it: Guthrie (l.) and Lougee now see publishers interested in JSTOR's focus on journal back files

As time has passed, and initial fears have subsided, publishers are increasingly eager to participate because of JSTOR's focus on the back files of journal literature. Making these back volumes available in digital formats poses little financial risk to publishers, since they generate little if any current revenue. More important, JSTOR offers real benefits for publishers. For example, having an electronic base of past issues on which to build a future electronic publication program is enormously valuable, considering what it would cost if the publishers were to try to replicate the process. JSTOR scans the journal back files at no cost to the publisher. Having the back files available also will generate data for publishers on the use of their journals. Publishers of many kinds of journals are now approaching JSTOR to inquire about how to sign on.

Obtaining publisher participation is only the beginning. JSTOR must convert the complete run, back to the first issue, for every journal in the project. This involves scanning each page at 600 dpi, converting the text through optical character recognition (OCR), and indexing the contents of the journals. Little did we know how difficult that would be.

Missing pieces

Rather naively, we originally assumed that we could just contact a major library and ask to borrow a duplicate copy of the complete run of the journal to be converted by a scanning bureau. It turned out that the "complete" run was anything but that, and that working with older text often challenged OCR software. Issues were missing from bound volumes, articles had been torn out, and markings on some pages made them unusable. Consequently, an aggressive review process was launched to find missing or damaged pages and identify problem areas for OCR.

Another significant problem was the difficulty in accurately determining the publication record for each title. Not surprisingly, many of these titles have changed frequency or format over time, and the current publisher was not able to provide a complete archival copy nor an authoritative history of the publication. JSTOR staff now work with other libraries and consult available access tools to deter-

mine the publication record for each title.

Representing the unique structure and contents of each title—thematic article groupings, special supplements, book review sections—has proven to be another challenge and has required a journal-specific analysis of indexing needs. JSTOR uses Elsevier Science's indexing specifications developed for TULIP and has enhanced them to include additional data elements and instructions for handling unique article groupings, book reviews, and so on.

Users and systems design

We have learned an enormous amount from the experience of others, especially librarians and users from our test sites. The original group of test libraries (Bryn Mawr, Haverford, Swarthmore, Denison, Williams, UM, and Harvard), and those that have followed have been important contributors to JSTOR's continuing development. Early users of the system demanded flexible and easy-to-use systems for printing articles. Although this is a formidable challenge, JSTOR's "helper application" for printing now offers users the option to print in different resolutions (including a very high-quality 600 dpi version that is nearly indistinguishable from the original) and on a variety of printer platforms.

We have also enhanced the capabilities of the search engine and have restructured the user interface. Consulting with users and librarians at the test sites, JSTOR's user support librarians work to understand how users in different disciplines work with journals and then translate these needs into new system features.

Among the improvements we have made through this iterative process are implementing a new frames-based interface, providing new print options (including testing centralized printing), offering prioritized search results, and allowing users to limit their searches based on content being sought (e.g., articles, book reviews, etc).

Beyond direct benefits

From JSTOR's inception, the goals of the project have extended beyond the direct benefits of providing more convenient access to—and reducing the storage costs of—academic journals. As stated in the 1994 Mellon Foundation Annual Report, a major goal of the original project was "to study the effects of providing high-quality electronic access on the usage of the back issues of journals in a variety of academic settings."

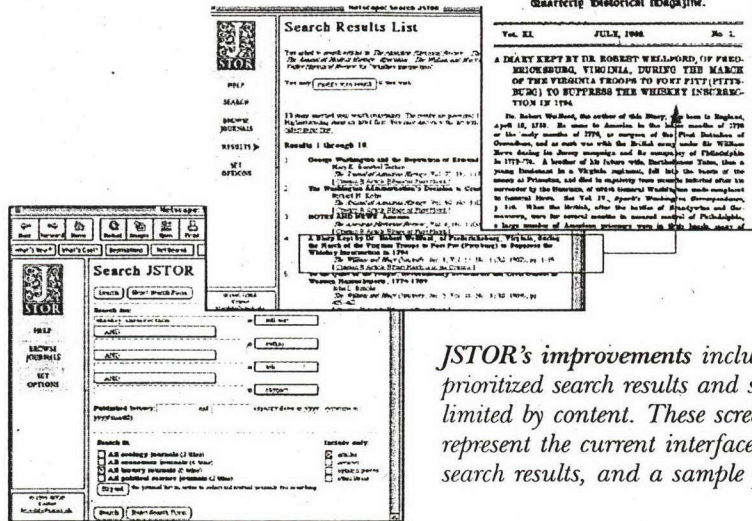
sevier Science and nine leading U.S. universities to test systems for the network delivery of full-text scholarly journals.

In 1994 JSTOR received a Mellon grant for a pilot effort to scan 750,000 pages of journal material and develop software to make it accessible via the World Wide Web using standard browser software. We selected ten journals (five in history and five in economics) and negotiated licenses with publishers granting permission to make the full journal back files available through electronic networks. We chose a small group of library test sites (see below) to provide feedback on the usefulness of the resulting information.

The underlying proposition that JSTOR proposes to address is that selective retrospective conversion to digital formats is economically feasible (and intellectually desirable) when the costs can be distributed among a large number of libraries. Furthermore, these costs will be justified by economies in the use of space, reduced library operating costs, and added convenience and value to users.

Benefits and complications

What seemed so simple conceptually has turned out to be enormously complicated to implement. Bowen has been heard to say on numerous occasions, "If I had known then what I know now...." Initially, because of understandable fears regarding the future impact of electronic technologies on their revenue streams, publishers were cautious about participating in the project. Getting them to sign licenses was itself a full-time job.



JSTOR's improvements include prioritized search results and searches limited by content. These screens represent the current interface, search results, and a sample page

To establish a baseline, JSTOR engaged Tom Finholt, an organizational psychologist at UM, and JoAnn Brooks, a Ph.D. candidate in the School of Public Policy, to conduct a study of usage patterns for the JSTOR journals. First, efforts were made to estimate the frequency of usage of the pre-1990 volumes. Subsequently, surveys of history and economics faculty at UM and the five college test sites were conducted in 1995 and 1996 to assess not only how usage of the journals is changing but also to ascertain whether access to digital material is altering scholarly practice and communication.

Finholt's early analysis of JSTOR shows initial levels of activity comparable to faculty use of more traditional technologies, such as online catalogs. Preference for the journals in the JSTOR set and faculty experience with the WWW were positively associated with JSTOR use.

As one of the first projects of its kind both in scale and in scope, JSTOR is committed to sharing its experiences with others in an effort to contribute to what is known about digital technologies and their impact on the scholarly enterprise. JSTOR intends to provide support for research in a variety of areas, including studies to quantify the economic value of electronic access and potential savings in shelf space; to measure JSTOR's impact on usage of older journal literature; and to assess possible productivity gains yielded by research tools of this type.

To "participate" in JSTOR means more than just purchasing access to a database; it means becoming a part of this ongoing effort to understand and improve the use of scholarly materials.

JSTOR's economics

Although the Mellon Foundation has provided a significant sum of money

to launch JSTOR (approximately \$4 million); it is up to JSTOR to develop a working economic model that will ensure its long-term viability. Fortunately, Mellon does not require a return on its investment, so the model need not factor in fixed costs already incurred. JSTOR only has to cover the cost of funding the enterprise as it goes forward. The goal has been to develop a plan that will allow licensing fees paid by participating libraries to cover those costs, which will be substantial.

We are often asked how much we pay per page for scanning. The natural inclination is to focus on the scanning costs as the primary cost incurred by the project. Actually, scanning is just one component of six broad categories of JSTOR's projected running costs. The six categories include:

- 1) Production: preparing the complete run, defining indexing guidelines, quality control;
- 2) Conversion: scanning, OCR, and indexing;
- 3) Storage and access: continuous investments in hardware and software to maintain access from a number of mirror sites;
- 4) Software development: to support new capabilities and migration of the database to new platforms and technological environments;
- 5) User support; and
- 6) Administration and oversight.

As one might imagine, in these early days many of the costs in our model are projections. As experience accumulates, we will know more and will be in a position to provide better answers to questions about costs. Given our best estimates, we have built a pricing strategy that will allow JSTOR to break even when it has approximately 750 participating libraries. We recognize

that this is an ambitious goal, but we have felt from the beginning that it would be important to reach out to libraries both large and small, and so we offer variable pricing based on the research intensity and size of the participating institution.

JSTOR-Phase I, as it is called, will provide the complete runs of a minimum of 100 important journal titles in ten to 15 fields within three years. In the future, we expect that there will be additional, independent phases of JSTOR that will include clusters of journals in specific fields. Through collaboration with publishers that are digitizing current issues of the JSTOR journals, users can link directly from current contents to JSTOR.

Our initial plan is to deploy JSTOR within the academic library community. Ultimately, we expect to make the archive available to public and other kinds of libraries and to individuals. The differential pricing structure for academic libraries is based on the size and degree to which institutions are focused on research according to the 1994 Carnegie Classification of Institutions of Higher Education. The licenses are based on a one-time database development fee (from \$10,000 to \$40,000) and an annual access fee (from \$2000 to \$5000). Institutions that elect to participate prior to April 1, 1997 will get a 25 percent discount. (For more detailed information, see <<http://www.jstor.org>>).

The broader benefits

As JSTOR has evolved and changed, we have always come back to the reason for its founding: to help the scholarly community make the transition to a changing digital environment. This is more than simply helping libraries deal with a preservation and storage problem, provide an added service, or save money.

We believe strongly, however, that there are dollars to be saved in capital and operating costs that will offset the investment in the project. There are many collateral benefits for libraries that participate in JSTOR. They will receive usage data on the electronic versions of core titles. They will have the chance to help refine and develop links between bibliographic systems and JSTOR titles and articles. They will benefit from the experiences of other participating libraries, and they will share in the opportunity to improve the communications between libraries and publishers by working to solve problems together. In short, JSTOR libraries join a novel communitywide collaboration.

NOTES ON NETWORK CONNECTIVITY IN SOUTH AFRICA

Tom Nygren, A.W. Mellon Foundation

January 21, 1997

Recent visits to South Africa and conversations with members of the academic and library communities there have persuaded the Foundation that inadequate network connectivity is the major barrier to progress on many fronts. This problem became overwhelmingly evident in working with university consortia in Gauteng and the Western Cape to help them create shared automated library systems. Simply put, these projects will not succeed unless the speed, capacity, and affordability of electronic links among institutions are dramatically improved. While the Foundation's experience has largely been limited to higher education, other sectors such as primary/secondary education, health, and the arts face the same obstacle and will not be able to reap the benefits of new information technology until this problem is addressed. A national solution is required.

The potential benefits for educational institutions of upgrading network connectivity in South Africa are far-reaching. A brief, incomplete, list would include:

- *Library resource sharing*, including bibliographic data, shared cataloguing, and common access to a wide range of electronic information. Two new library consortia (CALICO in the Western Cape and GAELIC in Gauteng) are already poised to invest in shared library systems, and at least two other library consortia are at earlier stages of development. With careful planning, a national academic library network including all 37 universities and technikons is attainable within the next five years. Both CALICO and GAELIC have also stated their intentions to include a wide array of other libraries (state libraries, public libraries, college libraries, etc.) within their networks.
- *Access to digital materials* beyond traditional library bibliographic data. An obvious example is the Foundation's ambitious journal storage project (JSTOR), which has the potential to give every South African academic library instant access to complete runs of 100 core journals in fields such as economics, mathematics, political science, ecology, and demography. The benefits to graduate and professional training, in particular, would be tremendous. There is also the potential to digitize a broad range of South African materials (including documents describing the modern history of South Africa, and the transformation of the country), but because access to all digital resources requires the transmission of large data files, their use is currently impractical.
- *Implementation of new cost-effective instructional technologies*. The next step, going beyond simply broadening access to digital materials, is the use of digital technology as a teaching tool. Several universities, including the University of Cape Town, are already experimenting with ways to develop new multi-media curricula. Thought is also being given to the development of teaching tools for math/science at the elementary and secondary levels. It will not be possible to implement these innovative approaches in any significant way without vastly increased bandwidth among institutions, which at present they cannot afford.
- *Advanced training and research* in applied social science/public policy and in other fields. American universities such as the University of Michigan stand ready to help train a new generation of South Africans in modern research techniques used in this country to analyze

census data, and contribute to policy-making in housing, crime prevention, and provision of health care, to take but three examples. But all such applied research requires the ability to access and download large databases.

- *Access to the Internet.** A smoothly functioning national network is an essential prerequisite for accessing the rest of the world. South Africa is likely to be a net importer of information for the foreseeable future, and it will be crucial for educational institutions to have an internal network that allows easy access to the Internet.

While the Mellon Foundation's focus is on higher education, the same benefits clearly extend to other sectors as well. The enormous potential advantages for primary and secondary education are self-evident. Hospitals are likely to be significant beneficiaries of technologies that permit teleconferencing, rapid transmission of x-rays and other diagnostic evaluations, and even, in the longer term, "distance medicine" applications such as telesurgery. Museums are increasingly devoting efforts to digitizing art images and exchanges of such information over the Internet is likely to enhance cultural awareness of different cultures. Thus, the Campbell Collection of Zulu artifacts at the University of Natal might be accessible outside South Africa, while the content of some American museums would be available in South Africa. Research centers, both governmental and nongovernmental, might make more effective use of databases, some of which are increasingly available only on the Internet. Individuals concerned about particular problems might engage more effectively in international discussions devoted to those problems. It is likely that the range of present experience with useful Internet applications does not even approach what will be available and useful in the future.

The Foundation is convinced that the problem of inadequate network connectivity in South Africa, although daunting, is by no means insurmountable. Based on our discussions with many of the interested parties, we believe that sufficient common interest and good will exist to find a solution that might "fix" this problem for all of South Africa, at least for the next five to ten years. In our view, the most likely solution should involve upgrading UNINET, South Africa's nonprofit educational computer network. Ideally, the minimum goal should be to provide UNINET with at least a 34 mbps ATM network while guaranteeing affordable user fees for at least the next five years. Such a circuit, which has a capacity 68 times the current bandwidth, is based on existing technology and has the advantage of allowing portions of the bandwidth to be dedicated to a particular user, thereby ensuring that each institution will actually receive the size of connection it can afford. Even if ATM technology is not available in the short run, a major increase in the bandwidth available to UNINET is essential. The use of satellite technology is another option that should be explored.

As we understand it, the primary obstacle to achieving these goals is not a lack of physical infrastructure (although ongoing capital investments will clearly be needed); rather, the main obstacle is the high fees charged by Telkom, the state-owned telephone company, for leasing digital lines. At present, most universities and technikons are connected to a 512 kbps network backbone. UNINET passes the rental cost of this circuit on to its members, with a maximum fee in 1996 for a large research university of around \$75,000 per year (for comparison, a similar link in the US would cost about \$15,000 per year). This month UNINET is instituting usage-based fees for Internet access (along with modest improvements in bandwidth) in an attempt to control and allocate the demand for bandwidth. Even so, the annual cost for a research university is likely to exceed \$200,000 in 1997. If it were available, one can only imagine how much a 34 mbps circuit would cost. This situation is clearly not sustainable if the benefits described above

* This memo does not address the problem of international Internet access. That is also a high-priority problem -- the current international bandwidth is only one megabit - but it must be dealt with separately.

are to be realized. (Attached is an excerpt from a report prepared in December 1996 by Jonathan Peizer of the Open Society Institute which details the present technical and financial problems limiting connectivity.)

Many of our Foundation's projects cannot be implemented until the connectivity problem is resolved, and we know that other members of the donor community face the same dilemma. A dramatic improvement in connectivity would "release," we believe, funding from a number of international donors who would contribute to the exciting prospects for transformation and development in South Africa. Also, many of the South African government's own development objectives depend on connectivity. We believe that opportunities for partnerships exist that can benefit all concerned parties, including Telkom, and we are hopeful that steady progress can be made in finding a solution.

Extract from:
“Open Society Connectivity Projects in South Africa:
Impediments to Investment and Solutions”

By: Jonathan Peizer
Chief Information Officer
Open Society Institute - New York

.....This project [a consortium of Western Cape tertiary institutions] is *very* attractive to us and the prospects of making a tangible impact in South Africa are real. The combination of available infrastructure, qualified technical personnel, support of management and a real commitment to information and resource sharing between institutions makes the odds of achieving success much higher than we would have in starting a similar project in Central/Eastern Europe. However, there is a major obstacle that has made us hold off any investment. Mellon has the same issue, and IBM's initiative is not reaping expected benefits between institutions due to this problem as well.

The issue is the cost and sustainability of bandwidth upgrades between institutions under the PTT's [Telkom] current rate structure for Uninet. While the bandwidth upgrade required for the pilot project under discussion is relatively moderate, (2 megabytes between institutions) various models we have considered are not sustainable by the Universities once the investment is made. The combination of pricing structure and restrictions on alternate technology to which the academic community in South Africa is subject is one of the most limiting and expensive I have encountered in the almost 30 countries in which we have sponsored projects....

I met with members of Uninet in both Johannesburg and Capetown. There is a great concern over the 1997 PTT pricing model and the costs of sustaining the *current* network. Today's connectivity will not allow the information sharing proposed by the Western Cape Project because of the limited bandwidth available between institutions in the consortium. Only five Universities in the country have access to a 1 megabyte link between them, with other universities and technikons connected to these five via links of anywhere between 64KB and 512KB. This latter bandwidth allows for Internet and E-mail access, but is so saturated, that nothing more can be done with it. The minimum bandwidth necessary for reasonable quality of service in a wide area University network starts at around 2 megabytes. Two megabytes is equal to 20% of the bandwidth available on a typical local area Ethernet network.

Universities are already facing general budget cuts. However, the PTT's increased pricing structure for network access between institutions as well as for international Internet access, are forcing some universities to consider cutting usage of service or even charging students for network usage. Other universities are seriously considering abandoning Uninet as a negotiator of University connectivity and working with commercial Internet service providers to obtain connectivity.

It does not take much imagination to guess which students will have access to these resources and which will not, if usage fees are levied upon them. Universities who resort to fee-based filtering introduce a form of censorship and limit the availability of information for advantaged and disadvantaged alike. In a society increasingly dependent on information to level the playing field, the Internet cost structure being imposed on these institutions is moving South Africa backwards and providing students less information rather than more. Moreover, resource sharing between institutions will reduce costs once training programs and projects like the Western Cape are in place throughout the country. If educational institutions cannot afford access to this medium, the greater efficiency and cost reductions that come from information sharing will never be realized.

As indicated, some institutional members of Uninet are beginning to look for alternative connectivity through local Internet Service Providers (ISPs) who provide similar cost structures (based on PTT rates) but better service and more localized international access. Uninet should be a forum for leveraging the University network capacity and impact. However the pricing structure imposed on it by the PTT provides little incentive for the member institutions to aggregate their needs and share resources. In Central and Eastern Europe we have worked for years to foster the kind of cooperation among academic institutions in network development that South Africa currently enjoys. Yet the connectivity cost structure is dividing their interests just as they are being directed to form consortia and share resources.

Aside from the impact on the Uninet network, this policy does not bode well for the PTT, either, in the longer term. Uninet represents a formidable customer- and income-generator on the data communications side of the PTT's business. Demand for information access will only increase. Losing these institutions to commercial ISPs now will exacerbate income generation problems for the PTT when it starts competing in the commercial marketplace. The ISPs these institutions choose now will make decisions for their customers related to the carriers they use. The PTT will lose the ability to negotiate directly with Uninet as an organization representing the academic and research network as a whole.

The PTT's pricing structure is effectively dampening demand rather than fostering it. It is making the error of looking at short term income from a relatively small constituency rather than the future volume of users that will be created by academic and research network if they get discount prices for connectivity now. The global trend toward exponential growth of Internet use is well-known. A reduced pricing structure combined with increased bandwidth now will foster more usage and gain the PTT a larger continuous revenue stream over the longer term. On the other hand, if it is perceived as the main impediment to access, its customers will abandon it in favor of alternate commercial providers as soon as they can.

The positive social impact of better connectivity cannot be overstated. The fact is that half of the most significant problems involving health, environment, education, law, etc., are solvable through an efficient method of information sharing. For example, providing health care information to local clinics through an infrastructure supporting the Internet represents a fraction of the cost of donating medical equipment or supplies. While both investments are important, one can achieve significant success with less capital investment on the information side -- an important consideration for a developing country. Unfortunately, the PTT's pricing structure makes this type of sustainable investment uneconomical. This is particularly true for the next generation of South African leaders currently attending the universities and technikons who might otherwise find creative uses for this technology, if they could afford access.

The academic and research community represents a powerful engine of change in South African society. They impact every level and field. I assume they supply the PTT with most of its staff. A prohibitive cost structure that denies students and faculty access to the information which is readily accessible to others around the world has implications for the development and equalization of this society. A real opportunity would be missed if a partnership is not developed between the PTT and Uninet now....

*Specian
Virtual Univ.*

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THE ANDREW W. MELLON FOUNDATION
140 EAST 62ND STREET
NEW YORK, N. Y. 10021
(212) 838-6400

OFFICE OF THE PRESIDENT

May 23, 1996

C.J. Silas
P.O. Box 2127
Bartlesville, OK 74005

Dear Pete:

I am glad that we had an opportunity to talk briefly this morning about Etienne Baranshamaje, who works at the World Bank and is dedicated to the mission of creating an African Virtual University (AVU). As I explained, Etienne would like very much to talk with someone at COMSAT about the possibility of obtaining help from COMSAT in giving life to his vision. In my view, there is very considerable potential for enhancing educational opportunities in Africa by means of the new technologies, and it would be splendid if COMSAT could be helpful in this regard.

With best wishes,

Sincerely,

William G. Bowen
William G. Bowen

WGB:n

cc: Etienne Baranshamaje

e-mail:

ebaranshamaje@worldbank.org

Review of Economic
& Statistics

Vol 42 No 1, Feb 60

PP 81-93

Howard University Press

THE WORLD BANK AND ITS ECONOMIC MISSIONS*

Frederick T. Moore

BY the spring of 1958 the International Bank for Reconstruction and Development, as a part of its work in aiding underdeveloped countries, had sent major economic missions to fifteen countries: British Guiana, Ceylon, Colombia, Cuba, Guatemala, Iraq, Jamaica, Jordan, Malaya, Mexico, Nicaragua, Nigeria, Surinam, Syria, and Turkey.¹ The published reports of these missions comprise the largest single collection of information extant on the problems and characteristics of underdeveloped economies. A careful reader of these reports is impressed with the wealth of detail and the obviously painstaking care with which the material has been assembled. Since more than seven years have now elapsed since the first report, it is appropriate to review this material and to ask how much has been learned about the process of development and also how successful the mission reports have been in diagnosing the key issues and in establishing development programs.

* This is a condensation of a report titled "The Failures of the World Bank Missions," RAND Corporation, P-1411, June 24, 1958. I am indebted to my research assistant Mrs. Marjorie Hald for her help in surveying the reports. Dr. H. J. Barnett and Dr. Charles Wolf read the original manuscript and made many helpful comments.

¹ In chronological order the reports on these countries are: *The Basis of a Development Program for Colombia* (1950); *The Economic Development of Guatemala* (1951); *The Economy of Turkey* (1951); *Report on Cuba* (1951); *Surinam: Recommendations for a Ten Year Development Program* (1952); *The Economic Development of Jamaica* (1952); *The Economic Development of Iraq* (1952); *The Economic Development of Ceylon* (1953); *The Economic Development of British Guiana* (1953); *The Economic Development of Nicaragua* (1953); *The Economic Development of Mexico* (1953); *The Economic Development of Malaya* (1955); *The Economic Development of Syria* (1955); *The Economic Development of Nigeria* (1955); *The Economic Development of Jordan* (1957). Reports on British Honduras, Uruguay, and Somaliland have been issued in mimeograph form, but they are specialized and are not considered here. In June 1957, a mission was sent to Thailand; although somewhat different in intent from previous missions, it will issue a report at some time. A summary of some of these reports appears in J. Spengler, "IBRD Mission Economic Growth Theory," *American Economic Review*, XLIV (May 1954), 583-99. Hereafter in this paper the reports will be cited by the country name.

What elements might we look for or expect to find in reports of this kind? First, since programs are dependent on good statistics, both to provide a basis on which to make decisions and to evaluate the effects of decisions once taken, some careful attention to the establishment of an effective social accounting system is to be expected. Second, the major outlines of a development program are required: the targets, the operational policies to achieve the objectives, the calculations of probable outcomes, etc. Flexibility is a virtue, but the outline should be internally consistent and unambiguous in showing the connection between the objectives and the means to those objectives. Third, in order for the programs to be implemented, a priority system for projects must be carefully delineated, and it must be shown that the priorities are consistent with fulfilling the development objectives. Fourth, in terms of the "paths" to development the real alternatives open to the country should be carefully surveyed, including estimation of the "pay-offs" and costs from alternative courses of action. Fifth, the price effects of development programs, probable inflationary pressures, and the effects on the balance of payments and the capacity to import require analysis. These are major elements which one might expect to find in a good economic development analysis; the list could be extended. In the remainder of this paper it is argued that the IBRD mission reports have covered these points inadequately, not at all, or ambiguously, with the result that the reports are unsatisfactory as economic analyses and unsuitable as guides to development programs.

Before proceeding to the substantive argument, however, one qualification must be noted. These reports were prepared at different times, by different groups of people, for different countries. They do not all share the same faults or the same virtues. The ensuing discussion should make it amply clear that the above criticisms do not apply in toto to all the reports, nor to any one report in particular.

I

The missions themselves are nominally independent of the Bank. The Bank, however, reviews the reports prior to publication and presumably uses them in the course of developing its loan policies. In turn the missions reflect some of the attitudes of the Bank, if for no other reason than that employees of the Bank are frequently included on the mission staffs. The reports of the missions cannot be fully understood without some brief allusion to some important issues on which the Bank has taken a strong position.

In the first place, the allocation of loans by the Bank reveals a preference for specific kinds of projects, to a degree that indicates definite ideas as to how economic development "ought" to proceed. By the middle of September 1957, the Bank had made 181 loans in 45 countries totaling \$3.3 billion.² Of the total loans made by the Bank, most are development loans, about 15 per cent having been reconstruction loans. The statement of loans made as of June 30, 1957 showed that the largest single sector (electric power facilities) accounted for 34 per cent of the total. Electric power and transportation together accounted for about 63 per cent; on the other hand, the sector "industry" accounted for only 17 per cent of the total.³ These are the loans for specific projects; in addition some loans for "general development" have been made.

The Bank obviously believes that investments in these sectors should have precedence, and it states the case boldly: "... most of the Bank's loans are for basic utilities . . . which are an essential condition for the growth of private enterprise . . . whether the loan is to a public or private borrower, the resulting expansion of utility services, particularly of power and transportation, is a prerequisite to the development of private initiative in industrial, agricultural, mining, and all other directly productive undertakings."⁴ It is clear from this that the Bank regards these kinds of investment as the key to economic development.

In carrying out its philosophy of development

² IBRD, Supplement to the *Twelfth Annual Report* (1957).

³ IBRD, *Twelfth Annual Report* (1956-57), 16.

⁴ IBRD, *The International Bank for Reconstruction and Development, 1946-53* (1954), 57-58.

through the medium of loans the Bank sets a strict and searching regimen. This includes determining "whether the country needs and can effectively use an addition to its investment resources, and, if so, how much and at what rate." Also, a determination of "the development requirements of the country, the order of priority of the various fields of investment, the fields in which Bank financing can make the greatest contribution, and the place in these priorities of the particular project under consideration." Attention is also directed to the economic and financial policies of the government with particular reference to whether they are "well adapted to the needs of the country."⁵

The Bank has also established various criteria for its loan activities. It is required that loans be for "productive" purposes, though the meaning of the term is not that of economists but is synonymous with "profit making." Also, it prefers not to lend to government-owned projects because "management is apt to lack incentive to exercise initiative and to keep operations at maximum efficiency." Furthermore, its general approach is "to determine what are or *should be* the important goals of a *proper* investment program" (italics added); but we are not told (though we might guess) what *improper* investment goals are from the point of view of the Bank. The Articles of Agreement of the Bank also require it to act "prudently" in making its loans. The Bank has interpreted that as requiring them to look into virtually every aspect, however peripheral, of a country's economic, political, and financial status. Chapters 5 and 6 of the pamphlet *The World Bank* are testimonial to the extent of investigation which the Bank feels is necessary before it will approve an individual project.

All of this sounds quite familiar — the preoccupation with profitability, the concern over internal management practices, the consideration of financial policies, etc. In fact it sounds very much like the questions a typical commercial bank asks before granting a loan. But how much does "prudence" require in the present case?⁶ Surely there is some middle ground be-

⁵ IBRD, *The World Bank* (June 1957), 56.

⁶ Note that the IBRD has never had a default of interest or principal. That is an astonishing record even for a typical commercial bank.

tween the conservatism of commercial banking policy and the profligacy of speculation. If development theory involves "bold new programs," one may legitimately question whether commercial banking theory has much to contribute to the problem.

This is the background in which the missions have operated. It would be incorrect to say that the missions have been slaves to the doctrines mentioned above; the missions are constituted as quasi-independent bodies. But it is fair, I think, to say that the reports of the missions do in fact reflect many of the same attitudes. As a result there are some serious questions about the probable effectiveness of the development programs and procedures which the reports recommend.

II

Most underdeveloped countries have inadequate statistics and social accounts. At best they have some semblance of national income accounts, some statistics on production by major industries (with the agricultural sector usually covered best), and financial statistics on imports, exports, and the banking system. The coverage is spotty; sampling and "informed estimates" are made to do for complete enumeration or more carefully designed experiments. Yet, if economic policies and programs are to be planned and evaluated in a sensible fashion, provision must first be made for industrial and population censuses and for social accounts. These are not a luxury, but a necessity for a country embarking on an ambitious development program. Without them it is literally impossible to understand the important elements of the current economic position of a country and, more important, to evaluate the results generated by a given set of policies.

Since the war there has been a wealth of material on the methods of constructing social accounts and related statistics. Starting with the excellent report *Measurement of National Income and the Construction of Social Accounts* in 1947, the United Nations has published a variety of reports in this field;⁷ they cover

⁷ It is unnecessary to list all of the relevant material; however, the following are illustrative: *A System of National Accounts and Supporting Tables*, Series F, No. 2 (1952); *Industrial Censuses and Related Enquiries*, Series F, No. 4

methods for conducting population and industrial censuses, standard classification systems for products and/or industries, and recommended accounting systems for national accounts.

It may be assumed that these materials were known to the staffs of the missions. Even if some substantial modifications had to be made in the methodologies suggested by the UN materials, it would be worthwhile to make the changes and to describe the system appropriate to the specific country. That, at least, would be a lasting gain, and one that deserved the time of the mission staffs. *Yet not one of the IBRD reports discusses in a systematic fashion the requirements for an accurate social accounting system and for balanced coverage in the other areas of statistical information.* Two of the reports — Syria and Iraq — come close, and the report on Syria is the better of these. In it a short chapter is devoted to the problem of statistical information, and specific recommendations are made on the types of data needed and the methods for obtaining them. The areas covered include national income accounts, sectoral censuses, and financial statistics. But because the needs are so widespread, the recommendations tend to be of the "shotgun" type. Recommendations for statistics on soil classification, traffic surveys, and agricultural credit are listed in equal rank with national income accounts and figures on industrial output, employment, and investment; nevertheless, this report comes closest to filling the requirement.⁸

(1953); *International Standards in Basic Industrial Statistics*, Series F, No. 3 (1953). The UN Series F, H, and M contain a long list of useful publications which are intended as guides in setting up statistical programs of all kinds. Also, there are other significant early publications; see *Income and Wealth*, Series I, ed., E. Lundberg (1951); also P. Dean, *Colonial Social Accounting* (Cambridge, England, 1953). For a brief review of some of the deficiencies and problems in the national income accounts of selected countries, see H. T. Oshima, "National Income Statistics of Underdeveloped Countries," *Journal of the American Statistical Association*, LII (June 1957).

⁸ Parenthetically it might be noted that the United States is not a good model for these countries to follow; the lack of integration in statistical programs in the United States is shameful. This may be changed if the recommendations in a recent report, *The National Economic Accounts of the United States: Review, Appraisal and Recommendations* (National Accounts Review Committee of the National Bureau for Economic Research, August 8, 1957) are followed. Also see the excellent review volume by the Conference on Income and Wealth, *A Critique of the United States Income and Product Accounts*, Studies in Income and

The margins of error involved in the national income estimates and in such components as savings, consumption, and capital formation are large, but the exact magnitudes are unknown. The report on Cuba notes that "no estimates of these factors have ever been made" and that the mission's calculations "should therefore be viewed as no more than an indication of the order of magnitudes involved."⁹ The Iraq report echoes this and says "no systematic estimate of the national income has yet been made."¹⁰ The report on Colombia contains a number of lengthy appendixes dealing with the problems of constructing national income estimates, estimating population and productivity, etc. Appendix A observes that "it is unlikely that better estimates will be available until the statistical organization of Colombia has been completely transformed." It also notes that there were no data on consumption expenditures, number of workers employed, amounts of wages and salaries, or incomes of major groups. Similar statements on income, investment, and balance of payment accounts and on production statistics can be found in the other reports. Population and the size and distribution of the labor force must, in some of these countries, be estimated by fairly crude means.

The essential point should be obvious. Even with prodigious efforts the statistical estimates produced are inaccurate and cannot be used save for the most gross type of comparison. Before further analytical or projective work can be done, either on an aggregative basis or for the most important sectors, provision must be made to collect the necessary statistics. The missions might have done a great deal more to regularize and round out the body of statistics which future analysts would have available. A systematic treatment of the need for statistics for policy planning purposes and a set of specific recommendations to fulfill those needs would seem to be the first order of business.

III

The heart of a development program is the set of investment objectives for the various

Wealth, National Bureau for Economic Research (Princeton, 1958).

⁹ Cuba, 509.

¹⁰ Iraq, 131.

sectors of the economy. In order to meet those objectives real resources must be available or be developed early in the program. Costs in both monetary and real terms must be calculated, and at some point the programs in the individual sectors must be aggregated and checked for consistency among the individual objectives. If things are successful to this point, the national income and product are expected to grow at some sustainable rate. That is the end-purpose of development.

Typically the reports lay out in some detail the total amounts of investment recommended in each of the major sectors of the economy. Aggregate investment as a share of gross national product is computed and extrapolated for a varying number of years. Assuming that the recommended aggregate investment is actually undertaken, the missions then go on to make an estimate of the increase in income or gross national product which they expect will be achieved. From this description one might infer that the reports contain a carefully reasoned sequence from the initial increase in gross (or net) capital formation to the ensuing increase in income; that is, that an analysis has been made of the probable values of capital-output ratios (capital coefficients) for the specific investment pattern recommended. This is a misleading inference, for the estimates of capital formation or investment seem to be made without reference to the growth in income. With one or two exceptions the two sets of estimates appear to have been made independently of each other. Nothing in the discussion demonstrates that the two are interconnected, that the missions took this interconnection into account in their calculations even in the most aggregative sense of totals for capital formation and the rate of increase in income, to say nothing of an analysis of the detailed recommendations on investment by sectors, the lags, and final effects upon income formation. It will now be argued that as a result of this lapse the estimates of income growth are overoptimistic and hence poor guides for the foreign countries; or else the estimates of investment required are too low, which raises again the question of the adequacy of resources (particularly local savings) to finance the programs.

Column 2, Table 1 arrays the (marginal)

TABLE 1.—IMPLIED CAPITAL COEFFICIENTS AND THE GROWTH OF PER CAPITA INCOME

	Capital coefficients ^a	Projected growth in income (%)	Population growth (%)	Projected growth in per capita income (%) ^b
British Guiana	3.5	4.6	2.8	1.8
Ceylon	4.0-4.8	>2.5	2.8	0.0 approx.
Colombia	2.8	5.5	2.0	3.4
Cuba	n.a.	n.a.	..	..
Guatemala	5.1-5.3	2.5	2.3	0.2
Iraq	n.a.	n.a.	..	..
Jamaica	2.9	4.0	1.6	2.4
Jordan	4.0	4.0	3.0	1.0
Malaya	2.9	3.0	3.0	0.0
Mexico	2.1	5.9	2.9	2.9
Nicaragua	2.8	5.0	2.5	2.4
Nigeria	4.0	3.0	3.0	0.0
Surinam	4.8	3.3	2.3	1.0
Syria	2.8	5.0	2.0-3.0	1.9-2.9
Turkey	3.7-4.3	3.0-3.5	2.0	1.0-1.5

^a The sources for these calculations are listed in the report "The Failures of the World Bank Missions," RAND Corp., P-1411, June 24, 1958. Copies of the report are available on request.

^b If K is the projected growth of income and r the rate of population growth, then $\frac{1+K}{1+r} - 1$ is the rate of growth of per capita income.

This can be approximated by $K-r$; the correction factor $K=1/(1+r)$ to be applied as $K(R-r)$ for a population growth of 3 per cent is .97. The figures in this column have been rounded.

capital coefficients which can be derived from the mission reports. Let us grant at the outset that there are many pitfalls in the derivation, use, and interpretation of such coefficients; yet for all that, they can be of value for interpreting the general content of the missions' recommendations.¹¹ It will be noted that there is one group of countries for which the coefficient is less than 3 and a second group centered around 4 or more. A capital coefficient of 4 means, for example, that if 12 per cent of income or product is invested, then income will grow by 3 per cent. It should also be noted that in Table 1 most of the coefficients are gross rather than net. If the gross coefficient is 4.0, the net co-

¹¹ The capital coefficients can be computed in either of two ways (a) as a comparison of the per cent of income or GNP invested to the per cent change in income over a period of time, or (b) directly from the data on recommended investment programs and projections of income. These are not conceptually different but simply different methods. Statistically they should yield the same results, but sometimes the missions estimate rates of growth of income and investment separately and later give projected yearly figures for each. In those cases the two methods sometimes differ, though not by much. Symbolically the capital coefficient, $I/\Delta Y$, is computed

$$\frac{I}{\Delta Y} = \frac{I}{Y} \div \frac{\Delta Y}{Y}$$

where Y is income however defined; I is gross or net investment.

efficient will be smaller, the exact amount depending upon the per cent of gross investment which must be used for replacement of depreciated capital.

There has been extended discussion of the values of average and marginal coefficients in developed as well as underdeveloped countries. There has been no consensus on the values in developed versus underdeveloped countries; *a priori*, good arguments can be produced for believing that higher coefficients will be found in either group. The statistical evidence is ambiguous; however, the writer believes that programs for rapid *industrialization* of a country — as opposed, for example, to programs which merely try to raise the output of a single sector such as agriculture — are apt to encounter an aggregate coefficient higher than that to be found in developed countries.

In the first place there is bound to be waste and inefficiency in the use of most capital equipment in these underdeveloped countries. The level of skill and education does not make us optimistic about the maintenance of capital equipment. Also, in tropical areas, which includes most of these countries, deterioration will normally be more rapid for buildings and equipment. Several of the reports recognize these facts by noting that expenditures for maintenance will be high for all types of construction (roads, buildings, railroads, etc.) and equipment. Consequently depreciation and obsolescence allowances must be reasonably high even in the first few years of an expanded investment program.

Second, the composition of the usual investment program in virtually all of the countries is weighted heavily with those sectors for which the capital coefficients are high. Table 2 shows the percentage allocation of recommended investment programs among major sectors in the economy. The distribution of proposed investment among the sectors varies substantially as between countries; however, agriculture (including irrigation) and transportation account for a high proportion in almost every case. If we add electric power, the three combined add to more than half of the total projected investment for eleven of thirteen countries (Mexico and Cuba are excluded).

What can be said about the capital coefficients

TABLE 2.—PERCENTAGE ALLOCATION OF PUBLIC INVESTMENT IN THE DEVELOPMENT PROGRAMS

	Agriculture (incl. irri- gation)	Industry and mining	Transpor- tation	Communi- cations	Power	Public works	Construc- tion	Health	Educa- tion	Adminis- tration	Miscel- laneous
British Guiana	40.6	2.3	26.1	7.7	2.2	8.3	← 11.3 →	..	..	1.6	1.5
Ceylon	28.7	4.7	26.9	*	13.1	3.7	..	12.2	9.1	..	..
Colombia	10.6	..	39.0	3.0	15.4	14.0	← 18.0 →	..	..	..	..
Guatemala	17.3	..	43.7	5.0	20.2	..	..	← 13.8 →	..	..	..
Iraq	37.1	21.9	18.4	*	1.0	12.8	..	3.0	3.6	1.0	1.2
Jamaica	41.5	16.3	5.6	..	..	..	15.9	7.8	12.7	..	..
Jordan	40.5	8.1	24.3	2.8	3.7	4.7	3.8	1.5	7.1	..	3.5
Malaya	25.6	2.5	19.8	3.1	11.2	13.4	2.2	4.8	6.9	1.7	8.7 ^b
Nicaragua	35.5	5.0	30.2	2.2	5.9	..	..	16.0	5.1	..	..
Nigeria	10.0	6.4 ^a	17.4	4.3	^a	11.2	..	13.5	16.1	21.2	..
Surinam	52.5	3.0	← 16.0 →	..	..	..	11.0	← 14.3 →	..	3.3	..
Syria	34.5	1.2	16.6	1.0	6.2	..	.8	7.5	27.6	..	4.7 ^c
Turkey	14.8	14.8	35.6	3.5	12.2	15.6	..	← 3.5 →	..	..	..

Figures may not add due to rounding.

* Less than .1%.

^a Power is included under industry.

^b Covers 1.1% for miscellaneous social services and the remainder listed as miscellaneous.

^c Covers 2.5% for community planning and services, .8% for tourist trade, and the remainder listed as "other."

in these sectors? The case for agriculture is ambiguous. On the one hand it is possible to get large increases in output from the application of very little capital, through better seeds, fertilization, changes in techniques, better choice of crops, etc. On the other hand large-scale mechanization of agriculture and extensive irrigation projects are exceedingly costly and involve high capital coefficients. Nine of the countries show large projects in irrigation, land conservation and recolonization, afforestation, flood control and drainage, and rehabilitation of reservoirs.¹² In Iraq this phase of the program accounts for almost one-third of total projected investment. Consequently, even for the agricultural component the capital coefficients implied in the development programs may be high.

For transportation (e.g., railroads, road building, etc.) and electric power we know the capital coefficients are above the over-all average coefficients by substantial amounts. And in the sector of "social overhead capital" (i.e., health and education) the same condition probably applies. Consequently the investment programs clearly involve relatively high capital coefficients in most of the sectors recommended in the mission programs.

It is worth noting India's experience with capital coefficients in these same sectors. In the Second Plan for that country an aggregate capi-

tal coefficient of 2.2 was used; that value has been criticized on the same grounds we cite here. In fact, it has been argued that based on the composition of output an aggregate coefficient of 5.1 is indicated and that coefficients in such sectors as irrigation and transport typically run around 4 to 7.¹³

Suppose now we assume that the estimates by the missions on investment and growth in national income are correct; what are the resulting estimates of per capita income? The calculations are shown in columns 3-5, Table 1. Per capita income can be computed from data in the reports, but in most cases the missions neglected to make this calculation. In six or seven of the countries the growth in per capita income is estimated to be less than one per cent, and in two or three it may actually be negative. One of the results of expenditures on health and public welfare is a drop in mortality rates so that the rate of growth of population rises sharply in a short time. For example, in Ceylon the rate of population growth increased from 1.7 per cent (1931-46) to 2.8 per cent (1946-51), in British Guiana the rate has almost doubled since 1945, and in Malaya it increased from 2.4 per cent (1937) to over 3 per cent (1953). Thus, for a number of these countries it may be difficult just to maintain the existing level of per capita income given the investment programs envisioned in the reports. Had the missions

¹² British Guiana, Ceylon, Colombia, Guatemala, Iraq, Jamaica, Jordan, Nicaragua, Syria.

¹³ C. N. Vakil and P. R. Brahmanand, *Planning for an Expanding Economy* (Bombay, 1956), 58-59, 75.

made a calculation of per capita income based on the population data available to them and on their own extrapolations of income growth they might have entered more qualifications on the efficacy of their suggested programs or — better still — might have gone back to estimate the size of total investment which would be necessary in order to raise per capita income by some small amount such as 1 per cent. In outlining a major development program it is surely a serious lapse to overlook these implications.

The picture which emerges from the mission reports is thus not encouraging. Obviously, some of these countries face the prospect of stationary or decreasing per capita income even if the general investment plan is followed and capital coefficients are as predicted. But capital coefficients may be higher than the missions imply, which introduces a further depressing element in the problem. The clear implication of this is that either the implicit rate of income growth is too high or else the proposed rate of investment is too low. These things could have been made explicit in the reports, but for the most part the above implications of the investment program are obscured. The resulting impression is more optimistic than is warranted, given the character of the programs recommended.

If the investment programs are to be carried through successfully, there must be adequate provision for paying for them. The sources of funds are foreign assistance and/or foreign investment, domestic private savings, and diversions from government revenues earmarked for development projects (as distinct from normal recurring expenditures). It frequently happens that local resources alone would be inadequate to finance a development program. But what about private savings as an important source of funds? Per capita income is low in all of these countries, relative to the developed countries. As income rises one normally expects savings to rise more rapidly, barring some extremely strong examples of the "demonstration effect" on consumption patterns. In fact one of the chief problems is to determine how to encourage and mobilize for use the increased savings which should be forthcoming. With one exception (Surinam), this aspect is completely overlooked

in these reports. No analysis of marginal savings rates, no programs for encouraging savings (beyond some references to proposed issuance of government securities) will be found in any of the reports. The Jamaica report notes only that savings will probably rise and that "the government should be able to mobilize part of this increase for public investment."¹⁴ It is difficult to see how a sensible calculation of potential outcomes can be made without giving attention to the savings which will arise from the projected increase in income or without making some plans for "capturing" those savings for use in investment.

On the other hand, the reports contain many data and detailed estimates of the gains to be made in public revenues through institution of new taxes (chiefly income taxes), reorganization of older taxes, and changes in administration. A typical report shows up to a dozen different sources of revenue with estimates of revenue from each source for every year in the program. Presumably, estimates of revenues from taxes, customs, duties, etc., arise directly from and are consistent with projections of investment, consumption, and income, but it is impossible to determine whether such consistency exists in the reports. In some instances there are grounds for skepticism. For example, in Guatemala it is estimated that internal resources (taxes, savings) will increase by 550 per cent from 1951-52 to 1956-57 while per capita income increases by 2 per cent. In Jordan revenues from income taxes, property taxes, and license fees are estimated to increase by over 160 per cent in a decade.¹⁵ All these things may in fact occur; they are not impossible. But when per capita income is increasing by less than 5 per cent, the reader is just not comfortable — nor convinced. The estimates do not seem to square with the rest of the picture. Second, even if the estimates are sensible in *real* terms, their attainment certainly depends on the monetizing of more economic activities. In some of these countries non-monetary transactions still account for a large proportion of the total (particularly in the agricultural sector). In order for revenues from direct (and even indirect) taxes to rise rapidly

¹⁴ Jamaica, 136.

¹⁵ Guatemala, 297; Jordan, 415.

there must be some assurance that money transactions expand greatly.

All of the above is meant to suggest that the major outlines of the development programs described in the mission reports may well be misleading. The missions appear to have started with the target of raising per capita incomes by some amount, but the language in the reports is too loose to enable one to be really sure. The composition of the investment programs leads one to believe that the capital coefficients implied in the reports are low, and the treatment of financial resources to pay for the programs does not demonstrate clearly that they were derived from the analysis of income changes. Savings gaps may actually exist; we just don't know. Furthermore, some promising methods for increasing non-monetary investment have either not been investigated or else have not been reported.

IV

In order for an objective evaluation to be made of the probabilities that income will rise smoothly, the development programs must be specified with precision, and priorities must also be assigned to the various parts so that projects scheduled later in time will have inputs available as needed and so that flows of final goods will grow. Priorities must be assigned in the large (which sectors of the economy are to be developed first?) and in the small (which projects in the list are most important?). The missions do not spell out in a useful way either kind of priority.

Table 2 has already indicated something about priorities in the large. Agriculture, transportation, power, and social services appear to get top billing. Investments in the last three sectors will generate some products for final users, but to a greater degree they are meant to facilitate the development of other industries, chiefly manufacturing, which produce directly for consumers. Consequently it is appropriate to ask: How much should be invested in these sectors out of a given, but rising, total investment? What lags can be expected before the output of these sectors is available? Which industries will benefit most by the developments in these sectors and by how much? By how much will the

costs of products from these sectors decline in the future? Some answers in a qualitative, if not a quantitative, sense are required before a priority scheme makes sense.¹⁶

The mission reports do try to indicate *general* priorities for investment; however, these priorities are rarely described so that the reader can tell whether they are consistent with the growth in income which the missions forecast. The timing of major blocs of investment and their correlation with the growth of income is missing from the reports. There are a number of loose statements of the type: "Agriculture deserves top priority in the development program." But just what such a statement means in terms of actual operational decisions and choices is left unspecified. The report on Guatemala says: "The mission has hoped to focus the limited available resources, by priority, into fields which promise early and cumulative improvements in income and the standard of living . . ." The Ceylon report contains a similar statement.¹⁷ Still there is little material which permits us to check these bare statements. In the reports on British Guiana, Iraq, and Malaya there are tables showing the projected yearly expenditures by major sectors in the development program, but again there is nothing to indicate the consistency of these estimates with the objectives of growth.¹⁸

To sum up, the reports treat priorities in the large in an unsatisfactory fashion. The critical elements are lumped with the minutiae in an unleavened group. At best, the reports suggest that some program should get top priority; for example, in Ceylon the restoration of the ancient reservoirs is so treated. Does this scheme have an absolute priority over, say, land colonization, and if only a relative priority then what are the limits? Where are the guide lines to tell

¹⁶ These questions are particularly difficult to answer for investments in health, education, and social services. An early and heavy concentration of investment here serves to reduce the mortality rate, hence raise the rate of population growth and stimulate consumer demands. A really hard-boiled attitude might counsel going slowly with investment here, since achieving a growth in per capita income is rendered more difficult. For a discussion of these problems and for a suggestion of that hardboiled attitude see S. Enke, "Speculations on Population Growth and Economic Development," *Quarterly Journal of Economics*, LXXI (February 1957).

¹⁷ Guatemala, 294; Ceylon, 108.

¹⁸ British Guiana, 30-35; Iraq, 182; Malaya, 203-204, 208.

the ministers in the country how far and how fast to push a particular program? Since resources are scarce and the competition for them is keen, the sense of urgency in priorities is accentuated. The evidence is lacking (or perhaps is merely obscured) to establish a sensible priority system.

On priorities in the small, the choice among projects in the same program, there is an added difficulty. Take for example a series of irrigation projects. Many of these will be large scale projects, involving much earth-moving machinery, cement, and labor. Any one of them might well exhaust the resources available within the country. The program for all such projects as laid out by the mission seems to indicate that general financial resources are adequate to cover a number of such projects at the same time; but there is good reason to doubt that this aggregative check is sufficient to establish feasibility. One further step is necessary; the first-order inputs in real terms must be added to see if they are consistent with the programs in other areas. Will the cement and machinery for this set of projects be available or will there be a scramble for them for projects in land clearance, construction, etc.? If the answer comes out wrong, a priority system must be put in effect to ration the use of the existing resources or else additional units must be imported. The mission reports tell us nothing about this. The possibility of immediate shortages in resources, the choices to be made if those shortages materialize, the priorities for different projects are simply not discussed. There are no criteria by which to choose among projects; any one project is seemingly as good as any other. What is needed is not a rigid ordering of preferences but an indication of the value of different projects. Qualitative judgments would be useful; some quantitative judgments would be superb.

The recommendations for individual projects in the mission reports frequently contain detailed specifications, although they do not discuss priorities in the sense described above. In a sector such as irrigation a typical report contains a long list of specific projects identified by name with an estimate of the total funds required. These lists are useful in themselves but one suspects that there may be inadequate resources to pursue all of them simultaneously.

It is here that an indication of priority is most urgently needed.

A corollary problem exists in choosing candidates for development in the manufacturing sector. Some manufacturing industries are ubiquitous and are easy to stimulate. Others are more difficult and require unique circumstances to make them successful; one need only mention steel to bring up a classic example of an industry of the latter type. What industries are peculiarly suitable for a given country? What are the criteria which should be used in making a choice? On this point some of the reports are specific. The report on Cuba lists twelve questions that should be asked starting with "Is it feasible?" and including "Will it provide jobs in the off-season for sugar production?" It also contains a checklist of industries which considers the sources of raw materials, the chief justification, and the principal retarding factors.¹⁹ Most of the other reports contain good discussions of the problems. The criteria for development are raised and prospective candidates are examined.²⁰ Only two of the reports decline to discuss the problem.²¹ One wishes that some of these same questions had been asked in other parts of the investigation.

V

The arguments in the two previous sections have dwelt upon aggregate measures of development or operational rules which illuminate the over-all course of economic activity and provide a starting point for more detailed analyses of the sectors of the economy. This prior discussion leads naturally to the next observation which, while methodological in tone, is nonetheless the most important single criticism of the mission reports.

The missions have erred in trying to do too much and yet in actually doing too little. Their reports are replete with data on almost every conceivable aspect of economic activity; the reader feels inundated with statistics. And to what purpose? Most of the statistics are never used again. They are obviously meant to be purely illustrative and descriptive. For the

¹⁹ Cuba, 789-90.

²⁰ Cf. British Guiana, 346; Ceylon, 524-31; Colombia, 409-38; Nigeria, 368-76; Turkey, 100-102.

²¹ Malaya, 426; Syria, 403.

most part they do not contribute to an understanding of the critical development problems in the economy, and they are not used in setting up a program or in checking its internal consistency sector by sector, and finally specifying the implications of alternative programs.

I am not seeking to raise here the question of central direction of development nor of that methodological tool, economic model-building. What is clearly called for, and what is missing, is some "political arithmetic" on the program and the alternatives.²² The arithmetic requires simply specification of a program and then a check for internal consistency and a determination of the availability of resources to meet the program.

It cannot legitimately be argued that programming in this sense exceeds the scope of the missions' authority. As it is, the reports in general outline a single program in rather general terms.²³ There are many loopholes left to satisfy the requirement that the missions should not lay out a detailed blueprint for development. It is one thing to provide room for alternative programs by being vague and quite another to be specific on the programs but to indicate the potential effects of alternative policies. Briefly, what is required is, first, a specification of several desirable objectives: for example, a one per cent increase in per capita income, "reasonable" stability in the balance of payments, and a price level increasing at some nominal rate. Other "sets" of objectives could also then be specified. Second, feasibility of the objectives

in the aggregate must be established. Usually there will be more than one configuration of the aggregates which will yield a desired outcome, and this implies something about the general types of policies to be followed. Third, feasibility must be established for the major sectors in the economy; inputs and outputs must be compared and shown to be consistent with the aggregates as well as the objectives. This is the essence of a flexible, yet accurate, approach which shows the alternatives and lets the country decide on what course to pursue.

On a functional level the process starts with some aggregative measures of output and income and their components — consumption, investment, government expenditures, etc. In order to arrive at estimates for these aggregates other estimates of tax rates, propensities to consume or save and to import, etc. must also be specified. Assumptions about the level of foreign aid, income-transfer and subsidy programs must also be introduced. It is at this point that the first kind of alternative should be introduced. Several plausible levels for tax rates, propensities, etc. should be estimated, and several sets of calculations made for income and output. Thus in forecasting the future course of national income a range of possible alternatives will be developed.

In turn, the central government has control over certain key variables such as tax rates, government investment programs, subsidies, and the like. Behavioral or structural relationships showing the potential effects of changes in policies can be established on this same aggregative basis. Suppose that we specify a target value for per capita income, for example, that it shall increase one per cent per year. What is required to make that goal feasible? First, one must start with some aggregative measures of output and income which initially appear reasonable from the point of view of projected labor supplies and existing levels of productivity. The procedure is simple and can be illustrated admirably from the OEEC report *Europe Today and in 1960*, where the iterative character of the calculation is apparent.²⁴

First, the projection of overall output was based on probable movements of labour supply and productivity.

²⁴ OEEC, *Europe Today and in 1960*, Vol. II, *Europe in 1960* (April 1957), 10-11.

²² I do not want to be misunderstood on model-building. Much more needs to be done in applying economic models to the problems of development. It would take too long to describe what the most useful lines of application are, but briefly the models should derive from the system of social accounts. Aggregative models are necessary but not sufficient. Models of other sectors which can be separated out are also required; however, these various sectoral models should be capable of being linked together at certain key points. An all-embracing model of the whole economy is an illusion, except as we limit the concept to a select set of problems. For example, input-output models, or their variant using linear programming techniques, are excellent for production-related problems but do not treat the effects of price changes in a satisfactory way.

²³ In a few countries some alternatives are stated; for example, the reports on Guatemala, Nicaragua, and Surinam contain two programs. The report on Turkey makes two sets of calculations, one on "conservative" assumptions and one on "optimistic" assumptions (252-53). But those are alternatives in name only; they don't indicate the effects of alternative policies.

This was followed by an assessment of how this output was likely to be apportioned as between government, investment, the foreign balance, and private consumption uses. Then, the main requirements of materials for this pattern of resource use were estimated, in particular those materials which would need substantial investment outlays or those which have to be imported. It was then possible to see whether the output of the main economic sectors — energy, transport, industry, agriculture, services and government — were likely to be adequate to sustain the level of output projected initially as an aggregate. It was also possible at this stage to assess investment needs in more detail and to see whether the original investment total, based on approximate overall capital-output ratios, seemed in conformity with the detailed picture. At this stage also, estimates of import requirements from non-member countries could be made. These, together with projections of the invisibles balance, made it possible to estimate the level of exports required to achieve certain objectives in the field of foreign lending and exchange reserves. In turn, the analysis of foreign trade had repercussions on earlier estimates of detailed production requirements.

This quotation is an excellent start; it could be a model of the arithmetic required, but it does not cover the whole subject.

If these initial calculations show that the target (one per cent growth in per capita income) is not feasible, the next step is to detail the policies required to achieve it. More investment by government, subsidies, changes in tax policy, incentives to private investment, etc. are the "instrumental variables" through which the economy can operate. Usually a number of combinations of policies can be specified which together will achieve the objective. One kind of policy (e.g., on tax rates) may be either a substitute for or a complement to another kind of policy (e.g., on government spending) so that it is possible to juggle various economic policies to show the configurations which would be sufficient to establish the given objective. It would not be necessary for the missions to say which one of the sets of policies is "best." It would be enough that they depict the alternative policies which lead to the same objective. They might then go on to specify other objectives (such as maintenance of income) and again show the types of policies required. In short, a menu of objectives and the means to achieve those objectives can be spelled out without choosing a particular path. It will be clear from such a menu that the uncertainties inherent in eco-

nomic development affect some objectives and policies more than others.

From the aggregative level of analysis it is then necessary to proceed to the several important sectors such as agriculture, transport, power, manufacturing, etc., and finally to the individual projects in each sector. At each level the available resources and projected outputs must be checked against the plans. Is the total output of electric power sufficient to supply the major projects planned in other sectors? Are the total demands for capital goods imports going to fit within the total of resources available to pay for them? Which projects among the list of those being considered in a given sector will make the "best" contribution in the light of other opportunities foregone? The purpose is of course to establish consistency among all of the variables in the system. The main feature of the method is that it is iterative in character, original estimates being modified as the analysis proceeds.²⁵

The mission reports do not in any way lay out the possibilities of alternatives in objectives or policies. One is left with the impression that there is a single path to development for the country; however, the necessary details of even that path are left vague.

VI

A development program, normal private investment, and consumption constitute immense pressures on available resources, particularly when the development program is pushed rapidly. A careful comparison of the availability of public and private savings plus net capital inflows and of the claims on those funds thus becomes of critical importance. Earlier we have alluded to the problem of mobilizing and encouraging private savings. The establishment of financial institutions and instruments will at least provide the means by which savings may

²⁵ More sophisticated variations than the "arithmetic" suggested here, but ones which should be within the purview of the missions, are represented by the methods employed in the Netherlands. See J. Tinbergen, *On the Theory of Economic Policy* (Amsterdam, 1955); Central Planning Bureau, *The Scope and Methods of the Central Planning Bureau* (The Hague, August 1956). Tinbergen's *The Design of Development* (Baltimore, 1958) might be required reading for all future missions. It is the best statement of the "art" of development programming.

be made easily. The establishment of credit facilities will in turn provide the means for the better utilization of those savings. Most of the reports make recommendations for the strengthening of both financial institutions and credit facilities. But the existence of these does not of course guarantee that the savings will then be forthcoming, and on this latter issue the reports have nothing to suggest.

As previously noted the mission reports in general foresee a rapid expansion in revenues from the imposition of new taxes and the reorganization of old ones, and also from the sales of securities to the public and to the banks. This gives them courage to predict that the government accounts can be balanced during the whole course of the development program. For example, the report on Colombia says: "We also believe that the proposed level of public capital formation is compatible with a balanced budget and that the program is consistent with . . . the physical capacity of the country."²⁶ And the projections in the Jamaican report show budget surpluses for every year to 1961-62 even under the maximum program.²⁷ The report on Iraq specifically points to the problem and says: "The principal task confronting the government is to prevent an inflation in any way comparable to the wartime one . . .";²⁸ however, in oil-rich Iraq this need be no problem since the sterling income it earns from oil can be used to pay for imports.

Nevertheless, in most of these countries it is probable that public and private savings will be inadequate to support a large development program; hence inflation is a serious problem. One alternative of course is to slow down the rate of development expenditures and to cut down on imports by commercial policy. Slowing down development may well be suicidal politically, and the temptation to expand credit and to resort to deficit financing will be strong. Then, indeed, inflation is a problem.

The reports do not contain sharply focused discussions of the impact of the development program on prices, of the amount or kind of inflation which can (probably) be tolerated, or of any of the nasty side-effects of inflation (e.g.,

crumbling confidence in the currency, greater inequality in income distribution, etc.) Typically, there are at several points general admonitions about the dangers involved, but there are no real estimates of the potential magnitude of the problem. This is particularly true of the effects of inflation on the maintenance of reasonable stability in the balance of payments. Development programs, particularly of the kinds recommended by the missions, immediately require capital goods of all kinds—generators, transformers, etc. for power projects, agricultural machinery, railway rolling stock, heavy construction machinery. All of these goods must be imported, so that the ratio of capital imports to total investment probably rises and total imports rise in any case. In Latin America during 1946-53 capital goods imports averaged almost 40 per cent of total imports and about 38 per cent of total investment—and this at a time when development programs were not as far advanced as the plans for the countries in the reports contemplate.²⁹ It is in fact difficult to judge what ratios are appropriate for the countries being considered, but they surely are no less than 35 per cent and could easily run as high as 50 per cent. At those levels the maintenance of capital goods imports is of overwhelming importance. None of the reports tries to estimate quantitatively what the development program is likely to mean in terms of such capital goods imports or what are their effects on the balance of payments.

About half of the reports contain data showing the balance of payments position for one or more years in the past; none of them tries to project the account to cover the period of the development program. One report on a country (Jamaica) which is blessed with a currency convertible to sterling says: "In strict logic it is therefore unnecessary to discuss, as a separate problem, whether Jamaica's future exports will be enough to purchase any 'necessary' amount of imports."³⁰ With that statement it also dismisses any discussion of the effects of price changes. But the reports for other countries in no such position leave the problem untouched for the most part. Several of them note that

²⁶ Colombia, 597.

²⁷ Jamaica, 272.

²⁸ Iraq, 90.

²⁹ UN Economic Commission for Latin America, *Analyses and Projections of Economic Development* (1955), 14.

³⁰ Jamaica, 278.

imports, particularly of capital goods, will probably rise and in a general way refer to the foreign exchange requirements, but the argument is vague. The report on Mexico is the only one which deals directly with the probable future level of imports, and then it does so by assuming that the ratio of capital goods imports to gross domestic investment will remain the same (32 per cent) as in 1946-50.³¹

Terms of trade effects are considered in the reports on Ceylon, Colombia, Cuba, and Mexico; but the problem is just as important in other countries in the list since commodities such as coffee (Colombia, Guatemala), tea (Ceylon), rubber (Ceylon, Malaya), sugar (British Guiana, Cuba), vegetable oil (Nigeria), and bauxite (British Guiana, Jamaica, Surinam) provide up to 80 per cent of export earnings in individual countries. The reports on Cuba and Colombia point to the problems associated with

the narrow export base, but the discussion does not progress much further. In the case of Cuba, however, the orientation of the whole report is a recognition of the importance of developing alternatives to the present dependence on sugar.

VII

On the whole the answers to these questions are disappointing. If the mission reports of the International Bank for Reconstruction and Development are meant to be documents on which development programs and decisions can be based, then they appear to have failed to achieve that objective, except in the most broad and general terms. As historical and descriptive summaries of the present economic position of the countries, as narrative accounts of the succession of events, and as useful statistical compendia on the countries, they receive high marks; but in other more important respects they fail to meet the needs for economic development planning.

³¹ Mexico, 132. However, see Appendix D, "Method of Computing Balance-of-payments Effects of Increases in Investment Expenditures."

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To enhance usability, special software has been developed that makes text, graphs, charts and illustrations thoroughly readable on screen and strikingly clear when printed. In fact, JSTOR-printed pages are likely to be of higher quality, more legible and easier to work with than the paper pages available in the library, many of which will have yellowed or become brittle with the passage of time.

HOW JSTOR SERVES KEY CONSTITUENCIES

Libraries are able to do more with less. With a relatively modest investment, libraries can build and broaden collections to include the complete runs of a wide variety of journals, many unavailable in any other form. And libraries can be secure in the knowledge that the archive of these electronic materials is protected, both now and into the future.

Today, thousands of libraries around the world store, conserve and reshelve the same journals. JSTOR allows libraries to invest in centralized storage and delivery of these materials, thereby providing enhanced access for users at a lower long-term cost. In addition, this centralized approach can free shelf space to accommodate growing collections of monographs as well as current issues of journals.

Scholars and researchers enjoy convenient, easily searchable access to full runs of important journal literature. This "library" never closes, the desired article is never "out." And what scholars need is delivered to their desktop, on screen or printed with standard printers. The sophistication of the search mechanism creates new opportunities to conduct research in multiple journals spanning many academic disciplines. Users can search the full text of the published materials or can find material by topic, author or key words.

Publishers benefit as they begin to deliver journals in electronic formats. With a database of the complete runs of the backfiles of their journals accessible, publishers have a foundation on which to add electronic versions of current and future issues. This foundation allows users to search seamlessly through entire journal runs, enhancing the journals' value to libraries and scholars.



A COLLABORATION IN
THE SCHOLARLY COMMUNITY

JSTOR is a shared effort among
university officers,
librarians, scholars and publishers.

JSTOR looks forward
to continuing the collaboration
and to developing new
ways to work together that contribute
to research and scholarship.

We invite you to join us in
this enterprise.

<http://www.jstor.org/>

South Africa
Communications
Telcom - S. Africa

→ Very restrictive -

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In 3. America it is a pretty problem

ETIENNE BARANSHAJE

— He is working on the
African Virtual University.

Guide to JSTOR Web Site

<http://www.jstor.org/>



Our web site is designed both to introduce our service, and to provide ongoing updates to libraries, publishers and users who are already familiar with JSTOR. You can access JSTOR's web site with any browser by entering the address shown above. Once you receive our homepage, simply place your cursor over one of the three icons on the central page and click on the desired option. You will not be able to "Enter JSTOR" unless you are affiliated with a JSTOR participating institution, but you can read "About JSTOR" or get "Help." To try the demo, click on the "Demonstration Database" link which can be found at the bottom of the web page.

In addition to information about how we began, where we are presently, and future directions, we provide access to a sample archive of journal literature that can be searched by anyone. This Demonstration Database contains early years of the following journals in which a user can conduct a search using JSTOR's specially developed user interface and search engine:

The American Economic Review
The American Political Science Review
The William and Mary Quarterly

Here is a quick summary of the links available in About JSTOR:

The Need - Information on the development and background of electronic publishing and the pressures facing libraries today.

Background - The history of JSTOR.

JSTOR Mission and Goals

JSTOR-Phase I Pricing and Availability

JSTOR Classifications - JSTOR's methodology in classifying institutions for pricing purposes.

Currently Available JSTOR Content - List of journals currently available in JSTOR.

The JSTOR Production Process - A description of the process, from negotiation of a license agreement, to the announcement that the journal is available for users through JSTOR.

Titles in Progress - Journals currently in the production stage.

Future Titles and Fields - Journal titles and academic fields to be included in our database.

Publisher License Terms - Highlights of JSTOR's Publication License.

Library License Terms - Highlights of JSTOR's Library License, as well as the full agreement.

Individual Subscriptions

Why Images? - Information on image and text-based databases.



METHODOLOGY FOR CLASSIFICATION

In developing a methodology for classifying the institutions into categories, our goal is fairness. We have done our best to insure that similar institutions end up in the same grouping. As a first screen, we have decided to base the classification on the 1994 Carnegie Classification of Institutions of Higher Education. This classification "groups American colleges and universities according to their missions", and thus offers an opportunity to vary pricing based on the degree to which an institution regards research as a fundamental aim. Using Carnegie classes has the added appeal that they are well understood in the community and the assignment of individual institutions to the various Carnegie categories is done by an objective outside party.

We have also added several other elements to our system to take into account the scale and research intensity of the institution: enrollment, number of doctorates awarded annually, and current serials subscription budget. We are using publicly available data to make these classifications, but we will allow institutions to report these figures to us. We combine the Carnegie categories and these other measures to produce four groupings as follows:

LARGE

As a first cut, all institutions classified by Carnegie as Research I, Research II, Doctoral I or Doctoral II will be regarded by JSTOR as "Large", with the following exception. If an institution has an FTE enrollment less than 7,500 AND awards fewer than 100 doctoral degrees annually AND has a serials budget less than \$750,000, it will be classified as Medium. In addition, we will also regard as "Large" all Masters I and Masters II institutions with an FTE enrollment of 7,500 or more.

MEDIUM

All Masters I and Masters II institutions with FTE enrollments between 2,500 and 7,499 will be regarded as "Medium". As previously mentioned, MAI and MAII institutions with enrollments of 7,500 or more will be "Large". Those with enrollments below 2,500 will be "Small", while those below 1,000 will be "Very Small".

SMALL

All Bachelors I and Bachelors II colleges with FTE enrollments of 1,000 or more will be regarded as "Small" (because of their near exclusive emphasis on undergraduate education).

VERY SMALL

All Master's I, Master's II, Bachelors I and Bachelors II colleges with FTE enrollments below 1,000 will be classified as "Very Small".



JSTOR PRICING AND AVAILABILITY

JSTOR will contain the complete runs of a minimum of 100 important journal titles in 10 - 15 fields within 3 years. We are calling this collection JSTOR-Phase I. In the future, we expect that there will be additional phases of JSTOR that will include clusters of journals in specific fields. These later phases of JSTOR will be independent of Phase I.

All academic institutions will be offered site licenses permitting access to the Phase I archive on campus networks. These licenses will vary in cost based on the size of the participating library/institution.

There are two types of payment:

- 1) A One-time Database Development Fee, for permanent access rights to information in the Phase I archive;
- 2) An Annual Access Fee, to help cover the recurring costs of updating and maintaining the archive. Access fees will be fixed at the rates shown below for the first three years of participation.

Prices

	<u>Large</u>	<u>Medium</u>	<u>Small</u>	<u>Very Small</u>
Database Development Fee	\$40,000	\$30,000	\$20,000	\$10,000
Annual Access Fee	\$5,000	\$4,000	\$3,000	\$2,000

Special Prices for Charter Participants

As an incentive for institutions to make early commitments to participate in JSTOR, we are offering Charter Libraries a 25% discount off of the standard fees. All entities that sign JSTOR License Agreements prior to April 1, 1997 will receive the Charter rates. Charter participants will also be eligible for similar discounts on later phases of JSTOR as they are available.

	<u>Large</u>	<u>Medium</u>	<u>Small</u>	<u>Very Small</u>
Database Development Fee	\$30,000	\$22,500	\$15,000	\$7,500
Annual Access Fee	\$3,750	\$3,000	\$2,250	\$1,500

Sample JSTOR Printout

Notes and Memoranda.

Quarterly Journal of Economics

October 1890

Volume 5, Issue 1
Pages 95-99

NOTES AND MEMORANDA.

THE most important publication of the quarter, at least for English readers, is the first volume of Professor Marshall's *Economics of Industry*, issued by Messrs. Macmillan. The same firm announces that the English edition of Professor Boehm-Bawerk's *Positive Theory of Capital* is nearly ready for publication.

Messrs. Williams & Northgate announce as nearly completed the second volume of Mr. Charles Booth's survey of industrial London. It will be more general in scope than the first volume, and will be illustrated by a poverty map of all London.

THE mode in which the silver act of July last will work must depend in part on the action of the banks, through whose hands the new currency passes in finding its way into circulation. The silver certificates of the older issue, when received by the banks of New York and other large Eastern cities, were either returned by them at once in general circulation or, failing that, were paid into the Treasury in discharge of public dues. In regard to the new notes, the usage, so far as yet established, seems to be to treat them, with more favor, as "current funds"; and this usage will probably be maintained so long as the Treasury redeems them in gold. We may therefore expect them to constitute a larger item in the bank holdings than the silver certificates, and to play a larger part in payments between banks. Nevertheless, the situation will probably present no essentially new features. No considerable amounts are likely to be held or used by banks; and the actual circulation of the new notes, like that of the silver certificates, will be limited to the small denominations. The first of them printed, as it happened, were in denominations of a thousand dollars and upwards, and found their way back into the Treasury as promptly as did the large silver certificates when these were first issued.

WE reproduce from *La Réforme Sociale* of May 16 certain figures on the movement of population in Aucomville, a commune of Southern France, in the department of Tarn-et-Garonne, along the fertile banks of the Garonne. The figures, which were gathered from the registers of the parish by its curé, the Abbé Galabert, reflect in a striking manner the salient events in the economic and political history of France for the last three centuries. The boundaries of the commune have been changed only once, and then very slightly; it has been purely agricultural throughout, and has been little affected by emigration and immigration; it presents, therefore, a remarkably favorable field for continuous observation.

M. Galabert presents his results in three tables, for the seventeenth, eighteenth, and nineteenth centuries, the figures in each century being given for periods of ten years.

I. SEVENTEENTH CENTURY.

Years.	Births.	Marriages.	Deaths.	Natural Growth of Population.	Remarks.
1597-1608 (1599 missing.)	} 393	54	297	96 increase.	Marriages not given for 1607 and 1608; more than 15 persons devoured by wolves.
1609-19	405	73	360	45 "	
1620-33 (1622-25 missing.)	} 352		579	227 decrease.	Epidemics in 1620, 1629, 1630, 1631.
1634-43	474				Marriages and deaths not given.
1644-53	399				
1654-63	411				
1664-74 (1668 missing.)	} 583	52	386	197 increase.	
1675-84	541	87	459	82 "	
1685-96	} 457	77	406	51 "	
(1689 and 1694 missing.)					
1697-1708	} 509	83	367	142 "	
(1698 and 1699 missing.)					

The most striking feature in this period is the extraordinary mortality of the third decade, due to the pest, which again

was mainly caused by the misery brought on by the religious wars. In 1629 alone there were 130 deaths; in 1630, again, 96. With the consolidation of the royal power and the end of the civil wars, prosperity begins, and the births increase, the maximum being reached in 1664-74, in the time of Colbert. Thereafter, the births decline, the deaths tend to increase; but, on the whole, the second half of the century shows a steady natural increase.

II. EIGHTEENTH CENTURY.

Years.	Births.	Marriages.	Deaths.	Natural Growth of Population.	Remarks.
1709-18	429	80	527	98 decrease.	
1719	48	12	49	1 "	
1720-29	418	82	302	116 increase.	
1730-39	418	44	356	62 "	
1740-49	410	77	331	79 "	
1750-59	372	65	421	49 decrease.	Marriages and deaths not given for 1757.
1760-69	384	74	313	71 increase.	
1770-79	373	86	390	17 decrease.	January of 1772 missing.
1780-89	405	96	379	26 increase.	
1790 and 1792 (1791 missing.)	60	15	121	61 decrease.	

The figures for the first years of the eighteenth century confirm the statements common among the writers of the time as to the wretched state to which France was then reduced by the disastrous war of the Spanish succession. The death-rate is at its maximum, and the deaths greatly exceed the births. With the end of the war there is a prompt recovery: in 1720-29, the births exceed the deaths. Thereafter, the population seems to have remained almost stationary, sometimes gaining by natural increase, sometimes losing. For the whole eighty-three years, the births were 3,317, the deaths 3,189,—a net gain of 128. The years immediately preceding the Revolution were sad: M. Galabert notes extraordinary mortality in 1778, 1780, 1782, 1783, 1789. The figures for 1790 and 1792 speak for themselves.

For the troubled years at the close of the century, figures

were not attainable; and the next table begins with the year 1804, and is complete only from 1821.

III. NINETEENTH CENTURY.

Years.	Births.	Mar- riages.	Deaths.	Natural Growth of Population.	Remarks.
1804-20 } (17 years.)	479	132			Deaths not given. Births average 28+ per year.
1821-30	296	90	174	122 increase.	
1831-40	287	119	261	26 "	
1841-50	287	94	275	12 "	
1851-60	259	104	219	40 "	
1861-70	254	102	227	27 "	
1871-80	228	85	248	20 decrease.	Small-pox epidemic in 1871.
1881-88 } (8 years.)	131	54	168	37 "	
1881-90 ?	165	67	210	45 "	Figures for 1881-90 calcu- lated on the basis of those for 1881-88.

The generation after the Napoleonic wars shows the marked increase of population which then took place throughout France. Thereafter, the general slackening makes itself felt. For the last two decades, the figures reflect strikingly the tendency towards an absolute fall in the population of agricultural France.

Looking over the three tables, we find a marked decline both in births and deaths in the nineteenth century, compared with the eighteenth and seventeenth. The total population is not stated, but has probably been at least as large in this century as in the two preceding; so much, indeed, might be inferred from the fact that marriages have been more numerous. We have, therefore, less births and deaths, more marriages, or, at least, no less,—a striking illustration, not less so because on a small scale, of the working of the preventive check in France.

ANOTHER step in the series of measures by which the German Empire seeks to deal with social questions has been taken by the act of July 29 of this year, for the establishment of courts of arbitration and conciliation. The communes are

empowered to establish courts for these purposes, which are to consist of a chairman (who may be neither employer nor workman) and associates elected in equal numbers by employers and workmen. If the communes do not act, and if either employers or workmen request it, the central authorities may establish courts of the same sort; and for mining industries they may do so without request from any one. The courts in all cases are to be permanent, the members holding office for at least a year. Their jurisdiction for arbitration extends to all disputes arising in connection with the contract of service. As to such, they are courts of law, and their decisions have binding force.

More interesting to the student of economics are the provisions by which these bodies are to act as courts of conciliation. The disputes arising between employers and workmen "in regard to the conditions under which work is to be continued or resumed"—that is, in strikes and lock-outs—they may endeavor to conciliate, if called on by both parties. When so called on, they are to endeavor to bring about an agreement. If unsuccessful in this, they are nevertheless to reach a decision, with the proviso, however, that, if the representatives of the workmen are all of one mind and those of the employers all of another, the chairman may withhold his vote, and so prevent any conclusion. The decision, if reached, is merely in the nature of a recommendation, to be communicated to the parties, and published at large.

With such limitations in the powers it gives, this latest of the German "social" measures is not likely to have any wide effects. The new courts, in their capacity as arbitrators, will hardly do more than to bring about a more speedy settlement of petty disputes. As boards of conciliation, the proviso by which they can step in only at the request of both parties seems to stand in the way of their accomplishing much that would not be done without them.

H.A.

This is great
AC meeting - They will
call you - let up a date

with me and our organization
leave - (in W)

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