

Working Papers on the Nature of Evidence:
How Well Do 'Facts' Travel?
No. 34/08

“On a Mission” with Mutable Mobiles

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August 2008



“The Nature of Evidence: How Well Do ‘Facts’ Travel?” is funded by The Leverhulme Trust and the ESRC at the Department of Economic History, London School of Economics.

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Abstract

The task of economic planning in the new nation of Nigeria in the early 1960s tested the limits of economic technologies: its recipes for development, its possibilities of measurement, and from differences in political economy. These dimensions of the problem beset not only the Nigerian politicians and civil servants but an array of international experts: each on their own mission to make the new economy. This story of mutable mobiles is revealed in the detailed diary entries of the economist Wolfgang Stolper - a man “on a mission”, for he was charged with making “the plan”. This first Nigerian economic plan was a mobile document that cycled around a changing circle of civil servants and politicians and only gathered powerful allies amongst them because of the mutability its elements. This mutability rested on a combination of decentralized knowledge and on regional democratic preferences. And, to make a plan that would gain acceptance outside the centre of calculation, these local facts and choices had to be made consistent with each other and with the projected future of the economy as a whole. This is where economic theory came in: it created a consistency between the current and future economy so that future facts - fictions - and current facts made good travelling companions for each other in their circulations around the political and economic community.

1. Introduction

How do you refashion an economy? When a new state emerges out of an old colony there is no necessary parallel economic transformation, yet the desire for such a new world is strong. What kind of

¹ This research was funded under the project “The Nature of Evidence: How Well Do ‘Facts’ Travel?” (Grant F/07 004/Z from The Leverhulme Trust and ESRC held at the Department of Economic History, LSE). This paper began at Duke University: thanks go particularly to the Economics Department, who supported my visit; to the History of Political Economy (HOPE) group – Craufurd Goodwin, Kevin Hoover, Neil De Marchi, Roy Weintraub, and (in 2007) Tiago Mata for early discussions about this paper; to the archivists - particularly Janie Morris and Eleanor Mills - at the Duke Economists’ Papers Project for their help in accessing Stolper’s papers; and to Aashish Velkar for research assistance in London. Thanks go also to those who commented on the paper: at the *ScienceFutures* conference (ETH Zurich, 6-9 February, 2008), particularly Chris Ritter and Daniel Speich; and to my colleagues in the LSE FACTS group seminar on 5 March 2008. Copyright Mary S. Morgan, 2008

an economy could be made? What degree of choice could there be in such an ambitious undertaking? How could such a future be fashioned? And who would make it happen?

These were the questions that had to be answered in planning the economy for the newly independent Nigeria in the early 1960s. This was the mission that drove Wolfgang F. Stolper, an American economist, to sign up as Head of the Economic Planning Unit - that is, as a Nigerian civil servant - in 1960. Ten days after his arrival Stolper wrote home to his wife:

I have the most enviable assignment a man can have: developing an integrated plan for the most important African economy with the biggest and most hopeful future of any African nation. Moreover, there are political aspects to the work which are also fascinating and important..... Even hardships are worth this opportunity. It is like peaceful army service. As long as I have an air-conditioned apartment, which will be essential in the humid season, I will get enough sleep. (27 July 1960, *Diary*, 2003: 2)²

In these few lines, we see both the optimistic idealism of those religious or humanitarian missionaries setting out to change the lives of some group of humans somewhere else, and the diplomatic and military sense of one sent overseas to undertake a special mission or awkward task. And presciently - given how early his remarks are in his nearly two year assignment - that he would experience both the physical hardships and develop the wider sensibilities associated with these notions of being “on a mission.”

² There are two versions of the diary, a published version labelled here *Diary* 2003, edited by Gray (2003); and a somewhat fuller, typescript, version (typed by his wife) in his archive, labelled here as “Archive Diary,” in Wolfgang F. Stolper’s papers, Series 1, Duke University Economists’ Papers Project (hereafter, “Stolper’s Papers”).

We can report his mission from the receiving side too. As we might expect from the specific political context: this was not a prosaic exercise in economic management. On the contrary, it was planning the economy of a new state in Africa, in which the idea of “development” signalled looking forward, away from the colonial past. We see these high hopes in an advertisement that Stolper obviously tore out from a Nigerian newspaper in late 1961, under the banner “Wanted: Planned Economy,” which describes planning as the “technical know-how for the building of a strong, proud, free and prosperous Nigeria.”³ Similarly, the Minister of Finance, introducing Stolper’s Development Plan in his “Mobilisation” budget in the Federal Nigerian Parliament in March 1962, is reported to have said:

I can see a vision of a new and prosperous Nigeria - a Nigeria whose blood is virile and whose aspirations are fired by noble objectives. The sleeping giant of Africa is awake and determined to take her rightful place marching with the rest of humanity. (Stolper, 1963: 169)

Here we see the claim to newness, elements of Nigerian nationalism, continental ambitions, and even perhaps of pan Africanism. The religious and military language sound like a crusade, appropriate for a mission setting out for making something anew. His carefully chosen budget label of “mobilisation” strikes a military note, while the plan’s stated aims “a modern, diversified and virtually self-sustaining [economic] system” offered a utopian, but unspecified, vision of the future.⁴

This Nigerian planning project not only allows us to explore aspects of this interesting phenomenon: the “economic mission,” but provides the

³ Stolper’s Papers, Box 4, File “Newspaper Clippings on the Plan,” It is unclear who posted the column and whether it was an editorial comment or an advert. It was extremely well-informed about the activities of planning at the time, so possibly it was funded by a political party.

⁴ This generality was of course politically astute given the regional difficulties of the time. An interesting comparison of utopias of the period might be made with the contemporary, but different circumstances of Martin Luther King’s “I have a dream” civil rights speech of 1963.

opportunity for a micro-history of how economic science is used. The case materials enable us to investigate the interaction of evidence and theory in the process of applying economics in the policy domain, and to illuminate the political economy - in a very immediate sense - of how economic science is used in a situation where context is also content. In analysing this process, we discover how flexibility and a certain kind of mutability are required in the marks of evidence for them to gain the kinds of powerful allies needed to complete the plan.⁵ As we will see, this mutability relates to the interaction between theory and evidence in economic policy work; the time horizon that planning places on the production and use of economic evidence; the changeability of the economy itself during the scrutiny of the planners; and the political economy of the “centres of calculation” involved.

2. Planning Missions

Development planning grew out of several ideas of the late 1940s and 1950s, and reflected the experiences from a number of different economic contexts. First, the notion of “development” itself was a largely post WWII idea indicating economic modernization, as distinct from merely growth. Second, the idea that an economy not only *could*, but *should* be managed towards a better path, namely that the government had a positive rather than defensive responsibility towards the economy, might be understood as a fall-out from the Keynesian revolution. Third, the planning experiences of war-time within the warring countries of WWII proved that economies could be successfully organised to achieve certain aims. Further, the relatively speedy reconstruction of war-torn economies suggested that other economies, including those that were judged underdeveloped, could - by planning - reach a better position

⁵ Science studies readers will note the reference to Latourian themes, to be taken up in Section 6 of the paper.

rather quickly and effectively. Thus “development planning” reflected a broadening out of these various growth and planning experiences and aims. Yet what ‘development’ meant was still not entirely clear, and those who have tried to make sense of this tangled episode in the history of economics have pointed to the radical shifts over time in the fashionable recipes for development, and to different ideological views that informed different planning ideals.⁶

While the constitution of a developed economy remained vague, the development literature of the 1950s seems to have less problem in defining “un- or under-development,” and there was a very widely and strongly-held belief amongst economists, governments and international agencies that such underdeveloped countries could indeed become better off by making use of various forms of economic intervention and direction (see Speich, 2008). And, while this optimism now seems misplaced, the contemporary actors’ terminology of “on a mission” captures both the faith that poor and underdeveloped economies could become rich, modernized ones, and that the planners, “economic missionaries” (my term), could be instrumental in creating this conversion.

As we will see, there were many optimistic planners in this planning project, and while there were plenty of ambitions within Nigeria, many of those “on a mission” wanting to plan the economy came from outside Nigeria.⁷ Unlike Stolper, they were usually on short investigative trips,

⁶ Many of these histories are participant histories - see Seers 1979; Hirschman, 1958 and 1981; Meier, 2005; Schultz and Meier (ed.), 1987; Arndt, 1987; even the World Bank has its own participant history, see Kapur et al, 1997. Interesting programmatic statements are by Rosenstein-Rodan, 1944, and Hoselitz, 1952, in the first issue of the journal *Economic Development and Cultural Change*. For non-participant histories, amongst a considerable literature, see Escobar, 1995; Cooper and Packard, 1997; the biography of W. Arthur Lewis by Tignor, 2006; and the recent Speich, 2008.

⁷ It is not clear why these visits were called “missions.” The word “mission” originated in the early modern period as a term of religious activity, in the nineteenth century it became associated with diplomatic activity, and in the early twentieth century with military activity. With respect to economics, the term covered a number of functions: investigative (perhaps denoting a shortened form of “commission” of enquiry); advisory (which might be more coercive or persuasive); and/or negotiative. The terminology is well accepted and was applied quite generally to policy-oriented visits by economic experts from a range of international agencies

more like military sorties, than his resident commitment. This was after all the Cold War, a political ideological war in which economic beliefs and realities were an integral part of the different allegiances. In the late 1940s through the 1950s, as the old European powers withdrew from Africa, the new superpowers helped to reconstruct those old economies and to grow new economies in their own image. Client states replaced colonial states where new allegiances were recognised by their economic stance as much as their political ones. In this context, missions from the Western regimes (and associated international agencies) saw their development task as one of creating a stable political economy in order that Nigeria would form a strong western-oriented nation in a non-socialist Africa.⁸ It is one of the ironic paradoxes of the cold war era that an economy such as Nigeria's had to be "planned" to keep it safe for the "free market" of capitalism and the free politics of democracy.⁹ These visiting missionaries come back into our micro-history later on.

How did economists of the time think an economy could be planned? Although *planning* was thought to be the way to *develop* an economy, there was a wealth of ideas and arguments about how to go about it.¹⁰ A UN expert report of 1951 offered an analysis of the contemporary approaches, their techniques, and the priorities and difficulties of planning in a series of observations. These now seem conventional, almost platitudinous, but in the context of those early days

(eg UN, FAO, IMF etc) from the middle 20th century onwards. (For example, according to the historian of the IMF, James Boughton, IMF visits of investigation and advice giving were always called missions, right from the beginning of that organisation's operations in 1947 [the IMF was founded in 1944]. Indeed, even a visit to the World Bank, a few blocks across Washington DC is called a mission! [private communication, 23 February 2008])

⁸ We see this evidenced in Stolper's diary discussions about the interests of the various cold war missions that arrived from the USA to visit Nigeria.

⁹ See Morgan, 2003.

¹⁰ Most planning at that time lay somewhere between the three extremes of the Eastern block central planning (controlled production via controls on capital, labour and organisation of work with output targets); French "indicative" planning (that depended on capitalist producers understanding and voluntarily following state targets); and the simpler application of public expenditure planning. It is worth remembering that planning is the more general term - not all planning is development planning, so these methods were not always aimed at "modernization,"

of development planning can be seen to have predicted correctly all the problems that Stolper had to grapple with during his work in Nigeria. Questions of the time ranged over the role of the state vs the market; over the use of investment in capital projects vs macro management vs input-output planning; over the role of domestic vs international resources; and over the order and speed of developmental policies (for example whether heavy industry should precede consumer income creation via agriculture, etc). Different international institutions, research centres and individual economists each had their own preferred way of going about planning for there was no universally agreed recipe for development or, perhaps, none that was applicable in exactly the same way everywhere for, of course, each country was very different from the next, just as the problem of reconstruction of Europe was not the same problem as developing the countries of Africa, which in turn were not those of Asia. This variety of questions and experience was used to buttress arguments about different kinds of planning that - as we shall see - spilled into the Nigerian planning process.

3. Our Hero and His Mission

Wolfgang F. Stolper, our hero, was born in 1912 in Vienna, Austria and died in 2001 in Ann Arbor, USA.¹¹ He began his education in Berlin and Bonn in the early 1930s and completed it at Harvard. He joined the University of Michigan in 1949, and developed a distinguished academic career. He enjoyed a parallel career as an economist undertaking

as opposed to economic growth.

¹¹ Information is drawn from the Duke Economists' Papers inventory biography, from Clive Gray's editorial introduction to Stolper's Nigerian 2003 *Diary* (Gray, 2003), and Stolper's "Addendum" in that volume. According to these sources, he was a member of Schumpeter's seminar in Bonn and later wrote a biography of him (1994). His Father, Gustav Stolper, an Austrian economist, journalist and then member of the Reichstag and prominent opponent of the Nazis, left Germany in 1933. Wolfgang - himself active in anti-Nazi student politics - followed his Father to America in 1934, and completed his education at Harvard, again studying with Schumpeter who had also moved there. He is best known to economists for the Stolper-Samuelson theorem - a trade theorem that, significantly, locates him as the first author -

“missions,” journeys of economic investigation, analysis, oversight and programme design for bodies such as USAID, the UN, and the IBRD/World Bank (International Bank for Reconstruction and Development).¹² The path to these activities had begun in the late 1940s with a summer job at the ILO (International Labour Organisation) reporting on economic development in Asia, and then, in the late 1950s, the construction of national income figures as a way to analyse the structure and development of the East German economy under planning for MIT’s Centre for International Studies.¹³ The MIT centre also sponsored his first connection to Africa, namely a research trip - to Europe - gathering information from colonial authorities and European Africanists. So his Nigerian adventure was both his first direct experience of Africa and his first planning mission.¹⁴

Wolfgang Stolper arrived in Nigeria in the summer of 1960 a few months prior to its independence after many decades of British colonialism.¹⁵ He found himself entering a federal state of about 35-40 million people in a country of four distinct geographical/climatic regions spanning swamps, rain forest, and savannah to near desert. Members of this population, the largest in an African country at that time, came from several main tribal/ethnic groups (and many smaller ones), practised several of the main religions (and fostered many smaller sects), and spoke even more languages than either of these other group categories. As Stolper soon learnt, the new nation state of Nigeria was not one constitutional entity, but several: there were three autonomously

published in 1941, the year in which he moved to Swarthmore.

¹² USAID, the United States Agency for International Development, previously ICA (US International Cooperation Administration). Note also the title of the IBRD which explicitly ties reconstruction and development together; though this is an international co-operative institution, the US is the largest shareholder.

¹³ For his German project, see Stolper 1960 and 1960a.

¹⁴ His mission activities continued from the 1960s to the 1980s, mainly to African countries.

¹⁵ There is no one date that established British colonial power for it was both a transition from the influence of trading companies and occurred piecemeal by treaty and conquest, completed only in 1914.

governed regions, with their own tribal, ethnic and religious mixes, and that were socially and economically distinct. English was - luckily for him - an unofficial language shared amongst the “establishments”: the educated elites of political, state and economic power. Stolper’s base was the federal capital, Lagos, a port city based on island/reclaimed land in the hot, humid coastal zone, and physically located within the Western region of the country.

When our hero, a middle-aged German/American economist, arrived in Lagos, he faced the challenging, even Herculean, task, of constructing a 5-year “national development plan” for the newly independent country. Although the Economic Planning Unit of which he was (administrative, not political) head, was funded by the Ford Foundation, he was nevertheless not an ex-patriate advisor, but a civil servant, and his unit an element in the relatively newly created Nigerian Federal Ministry of Economic Development. He arrived on 17 July 1960 and left on 3 June 1962, a two-year period of service with one long break (between September 1960 and February 1961 for some pre-committed teaching). As we shall see, his task was a very considerable indeed. But as we shall also find, his commitment proved equal to his mission - a mission not to develop the Nigerian economy, but to create a plan for its development.

As the 1951 UN report emphasized, the first thing to do in planning is to figure out where you are now: the starting point. The Nigerians, of course, were keen to fashion a new economy, but their economy was not a blank slate. Ideally, a planner needs to know all the economic resources of the nation: its land (and its qualities), its population, its capital and financial resources and their qualities, the main productive sectors in the economy and their products (e.g., farming and manufacturing). Planners need to know also the distribution of all these things: where the skilled workers are and what skills they have, where the

fertile land is, and where the climate makes life difficult (e.g., where the tsetse fly thrives and so cattle do not). They need to be able to figure out the likely growth rates of those resources and their likely price changes (e.g., exports of cocoa and ground nuts, and their prices), a most difficult problem. They also need to know the aggregate possibilities of the economy in terms of savings, investments, consumption, exports and imports, the expenditure and income of the state and its monetary policy. And so forth and so on.

What did these Nigerian planners know of their existing economy in respect of all these elements in 1960? There had been requirements for a 10 year plan under the Colonial Development and Welfare Acts of 1945-57 and a number of data gathering and planning efforts had begun in the 1950s.¹⁶ Most significantly, at a joint initiative of the British Colonial Office, the (colonial) Nigerian Government and the Colonial Economic Research Committee, national income accounts had been constructed for the economy for 1950-51. These had established not only the first such accounts for the nation, but some conventions for counting and valuing non-market economic activities in the country.¹⁷ There had also been a population census of 1952-53 (the first one), and a wide data gathering exercise in 1953 for a development programme produced by a mission of the IBRD/World Bank that had visited the country for just two months in 1953.¹⁸ More recent information was available in the *Economic Survey of*

¹⁶ See Helleiner (1966) and Falola (1996) on the earlier planning attempts.

¹⁷ The job was entrusted to Alan Prest and Ian Stewart, an economist and a statistician, at the Department of Applied Economics, University of Cambridge (see their 1953). Their third man on the ground was the Nigerian civil servant, Godfrey Lardner (of whom more anon.). This department was the home base not only of Richard Stone, one of the main inventors of national income accounting and the person creating the internationally accepted definitions and measurement standards for the NIA for the UN, but also Phyllis Deane. Her influential *Colonial Social Accounting* of 1953 (conducted and published under the National Institute of Economic and Social Research label) had opened up the problem of counting things which had no easy economic measure - that is things that were produced and consumed but were never sold. See Morgan, 2008 forthcoming, on these two examples, and Speich, 2008 on the more general spread and importance of national income accounting to the development project.

¹⁸ See IBRD, 1955. According to Stolper, these early planning outlines were basically public investment programmes using Federal surpluses, and where the process involved, according to

Nigeria of 1959, an initiative of Charles Thompson (the head civil servant in the Ministry that Stolper joined) which brought together all the available statistical evidence (and some map evidence) about Nigeria's economy, up to about 1957 or 1958.¹⁹ At the same time, E. F. Jackson and Pius Okigbo had been constructing national income accounts for the Nigerian economy to fill in the period 1950-57 and these became available to the planning team in typescript at a certain point.²⁰ The importance of these latter national income accounts was that, taken together with the earlier estimates for 1950-51, they could be used to establish aggregate growth rates, and in a consistent way. These data were therefore an important complement to the freely measured growth rates of various economic particulars such as the outputs of minerals or cocoa, or the patterns of exports and imports, as found in the tables of the 1955 IBRD report or the *Economic Survey* of 1959.

It was on the basis of all these data that Stolper's optimism about the future of Nigeria was based, for they suggested strong economic growth (around 4% p.a. in GDP), an increase in capital investment particularly social overhead investments, a healthy population growth, and a good resource basis, including the new discovery of oil reserves (see Stolper, 1963: 169 & 172). But just because of this healthy growth, much of the information obtained in the early 1950s, and even the more recent data for 1957, was of course quite out of date by the time Stolper arrived. And much stuff was missing for this was a decentralised country: apart from the Federal Government's economics and statistics teams, each of the autonomous regions had its own bureaucracy, that acted as a

one of the civil servants of the time, "finding out what everyone planned to do, cutting it back a little, and summing it" (Stolper's *Diary*, 2003: 17).

¹⁹ Thompson was also instrumental in establishing other data collections, commissioning a survey of transport in Nigeria by the Stanford Research Institute, and an assessment of the Niger Dam project, which all became available to Stolper's team.

²⁰ Jackson and Okigbo's data became available to Stolper - though exactly when is not clear. They were promised within two weeks in August 1960 (*Diary*, 2003: 49), but still not delivered to him in March 1961 (*Diary*, 2003: 70), and only finally published by the Nigerian Government in

separate body of hunters and gatherers of economic data and that formed separate centres of calculation. These three regions had different colonial legacies, different political power-bases, and different degrees of economic development: the Western region had the most effective degree of economic data collection and economic knowledge, followed by the Eastern region and then the Northern. And if data were not missing, their accuracy was doubtful. For example, a well designed agricultural survey was conducted by the rather effective Western region, but even they rated much of the data they collected as only +/- 15% accurate, and there were some elements with an unfortunate level of +/- 50% accuracy!²¹

If we look at Nigerian planning as a process where the departure point was known, the aim was a defined and shared one, and there were known ways to get from here to there, we have the wrong impression. As Stolper wrote in the immediate aftermath of his planning experience:

Much of development theory proceeds ... on such assumptions as that the future is known and that the existing starting point is well defined. The practitioner, by contrast, very quickly finds himself afloat in a sea of uncertainties. (Stolper, 1966: 3-4)

4. Planning Nigeria Through Stolper's Eyes

We can look at all these planning questions and the planning process through Stolper's eyes from the diary he wrote every few days and sent home to his wife.²² Maybe Stolper was surprised by how little was already known in the form of economic data about the Nigerian economy, maybe not. He soon set about filling in his own large

December 1961 under Okigbo's sole name.

²¹ "Agricultural Sample Survey, 1955-60," Bulletin 4, Western Nigeria, 1958-69, mimeo; in Stolper Papers, Box 5, File: Statistical Papers. The new census of population of 1962 was undertaken but abandoned before publication of the results for political reasons (see Forrest, 1993).

²² See note 2.

information gap. He took every opportunity he could to travel through the regions; and to look carefully at the arrangements and qualities of fields, farms, factories, mines and fisheries. He did not just observe, but asked everyone he met: farmers, businessmen, traders, etc. about their economy: His diaries show how he raised points about his observations and experience one day, answering himself a couple of days later when he has found out the reason. He was a genuine social science observer, interested in religion, education, medicine, hierarchy, burial patterns, and so forth. He drew also on his personal experience as an actor in the Nigerian economy attempting to get curtains made for his apartment, trying to get travel arrangements or rest-house reservations made, and most memorably - attempting to organise the safe delivery of a grand piano that arrived in the pouring rain (for his leisure hours, such as they were, were spent in playing this instrument and listening to classical music records).²³

As well as making his own observations, he sent out requests for information to the central bank, other Federal government departments, the statistics office, and the equivalent bureaux in the three autonomous regions. His requests sometimes grew into projects for those offices to gather new information, to sort it, to calculate things, and send them to Stolper, for his planning depended upon the bureaucracies of all the regions, as well as the central state, to produce economic facts and circulate them back to him. It was far from easy to persuade all these other people not only that they should gather such information but that they should share it with him. This involved trips to the regional capitals, detailed discussions with officials as to what data to collect and how to collect it, working meetings analysing the data and so forth. He had to cajole and sometimes threaten to get his data, for example, his attempts

²³ The story of the grand piano's arrival (apparently from the Lagos Musical Society) is available only in the unpublished version of his diary: Archive Diary, Stolper Papers, Box 1, 73-74. See

to get information out of the Federal statistics office began with polite requests to an equivalent level civil servant, but then involved a series of follow-up visits to that office and necessitated arguments about why it was needed in such haste and such form, followed by requests via senior levels, and - eventually - by his sending his most junior planning office member to look at the statistics in their filing cabinets and borrow those files for the planning unit to work on!²⁴

Apart from his diary, Stolper's archive of personal papers holds many other items from his two years as a Nigerian civil servant. There are several other important contemporary resources in which he reflected upon his work in Nigeria. In April 1962, he discussed some dimensions of the plan at a meeting of the Nigerian Economic Society (see his 1962 and the discussions that follow).²⁵ In February 1963, he was asked to contribute a paper on his experiences to the general science monthly *Scientific American*, who compiled a special issue on economic planning; and published two other papers on his experiences.²⁶ Finally, his *Planning without Facts* (1966) analyses his Nigerian experience for a professional audience. At every level, these resources reveal that Stolper's view of planning is a pragmatic one. But they also reveal how far he was feeling his way. When he arrived in Nigeria, he was not quite sure how to undertake his planning task, as we see in an early memo he wrote for the Joint Planning Committee of the National Economic Council five weeks after his arrival in late August 1960: Here he set out a shopping list of things to be measured, things he hoped he would find, things that he hoped different Federal and regional offices might supply, and how he thought of putting these together.²⁷

Morgan (forthcoming) for more on Stolper as observer.

²⁴ *Diary*, 2003: 67 & 72-74.

²⁵ This discussion was by local economists both involved in the planning project and academics who were well informed about its processes and so offers a close view of contemporary informed Nigerian opinion. According to his diary entry, Stolper found himself in agreement with most of the criticisms of the plan, particularly those of Oje Aboyade, who replaced him as chief of

Stolper's planning technology evolved as he worked, but his basic approach, as in information gathering, was to rely on the wider Nigerian economy and polity in selecting the elements of the plan. In this context, Stolper expressed admiration for Tinbergen's decentralized view of planning, shaped by his experience of planning the post-war reconstruction of the Dutch economy and by the traditions of Dutch society in which not just different political and state officials, but different social and economic groups, participated in decision making.²⁸ Stolper's approach therefore involved asking the democratic representatives, both Federal and regional, what activities they wanted to develop and invest in. He consulted consulting grass roots, middle managers and entrepreneurs to see what investment and activities were feasible, both what could be done in terms of physical resources, and in terms of available skills including capacity to manage and execute projects. An example that resulted from one of the research trips recorded in his diary, and that found its way into the following observation for his *Scientific American* article, shows this twofold aspect of gathering local facts and pinpointing local potential activities for development the same time:

We thought it absurd in any case for a man sitting in Lagos or any of the regional capitals to pretend to know in sufficient detail such matters as the agricultural problems in the Lake Chad

the planning unit, see *Diary*, 2003: 273.

²⁶ There are two versions of the *Scientific American* document too - his first draft in early 1963 (in Stolper's Papers, Box 4, file "Scientific American"), and the later published 1963 version; unless otherwise stated, all references will be to the latter. The two other papers were an informal reflection for an Italian economics journal, and a more descriptive account for an economic history journal (see his 1963a and 1963b).

²⁷ Memo dated by Stolper 21 August 1960, and circulated to the committee by the secretary, civil servant C.P. Thompson, on 23rd August, 1960. Stolper Papers, Box 3, file: "Nigeria's First Visit."

²⁸ Tinbergen's theoretical analysis of decentralization took into account both how different groups' preferences could be accommodated and how each groups' likely actions could be taken into account in the plan's implementation: see particularly Tinbergen 1952 and 1954. (For a broader analysis of this particular experience of Dutch planning, see van den Bogaard, 1998.) Although it is clear that Stolper already has an admiration for Tinbergen during his diary writings, it is only in his 1966 professional book on his work in Nigeria that he references the latter's importance to his way of thinking. (There, he also refers to Chenery, Walras, Leontief,

area. We therefore emphasized development of the planning framework from below and the decentralization of decision-making in the execution of the plan. (Stolper, 1963: 178)

After collecting all the information he could find about a project, he set out to calculate a “payoff” measurement: a kind of cost-benefit analysis both in real terms and in monetary terms, to see if that project seemed viable. For example, an Israeli designed scheme to set up farm settlements for training farmers sounded wonderful, but the number of young men it would train was so small that the cost per person and per farm turned out to be very expensive, and not economically viable.²⁹ This kind of calculation was where his economic science came in: knowing not just how to measure things, or to value difficult things that were not already valued, but how to figure out what each activity would cost in real terms to the economy over the forthcoming time period, and how it would benefit it and when. This calculation regime enabled him to assess the coherence of each of the proposed activities and to rank these in terms of viability of achievement and usefulness for the future of the economy. All this depended upon the information he gathered in the field and through the various contacts and offices about the likely costs and benefits and so getting answers to a multitude of prosaic and often technical questions such as: just how much ground nut oil could be pressed from a new machine of a particular design, and how far profits from it would depend upon the prices that might be paid.

The second important step where planning required his economic expertise was in examining the consistency in three different respects: of all these activities with each other, *and* with the overall resources and capacities of economy, *and* with the likely changes in these capacities over the forthcoming period. The coherence of the overall plan depended

Chakravarty and Lewis: an interesting and eclectic collection of “great names.”)

²⁹ *Diary*, 2003: 242 and 274. See also his 1963a for a longer discussion of the pay-off

upon the fit of the set of economic activities and investments proposed by the democratic representatives with the likely aggregate resources of the economy over the intended five years of the plan. This is where Stolper claimed the usefulness, indeed, necessity of using economic theory where there was a structural understanding of the whole:

It is easy enough to produce optimistic projections and make things come out right. But the real function of an aggregative framework is to allow one to test the consistency of individual decisions. Only if individual decisions can be linked to each other and to the aggregations are the aggregations a legitimate tool of planning. (Stolper, 1966: 15)

This three-fold consistency requirement was not a simple macroeconomic adding up problem. It was an assessment - in terms of the resources and potentials of the people, place and available funds - that entailed sophisticated and complicated calculation using the conceptual framework from economic theory. Stolper thought this a matter requiring not only his greater understanding of theory and expertise (compared to others in the planning team) but of his imagination:

I work, for a theorist, with imagination - not intuition, but just imagination. I have the ability of being able to extract a maximum of information from scanty data, but this requires the painstaking study of detail. Lyle and Peter [his junior American colleagues] don't quite understand yet, how the detail is used in a general context. (Stolper, 3 July 1961; *Diary* (2003): 141-42)

It was not sufficient that the bits of the plan fitted together (the first consistency check) and that the plan fitted into the macro-constraints of the national income accounts (a second consistency check) but that attention was paid to the ratios of capital to re-current spending and re-current physical capacities (a third problem of consistency). It was no

calculations.

good Stolper argued, as an example, to undertake lots of capital spending on schools or hospitals, or even to be given hospitals from an aid donor, if you could not then afford the current expenditure to keep them running and had not sufficient trained teachers, doctors and nurses to staff them.³⁰ This sounds a simple point, but none of these activities could be considered in isolation. His analysis suggested that “the plan” should have less immediate social overhead investment and more immediately productive investment - for example in energy, or agricultural productivity - to generate more re-current expenditure possibilities for example, for schools and hospitals in the future.

And, as if all this was not enough to keep him busy all hours of the day and much of the night, Stolper was always on the look out for the dangers that came from being a “new state” with new rulers, and from the intersection of political and personal gains.³¹ Such dangers were multiple and sometimes surprising. On the one hand they included the obviously overambitious capital projects which, while economically beneficial, could not be resourced, or managed, or kept going on a continuing financial basis, as well as the important social overhead investments which were needed, but still could not be done overnight. For example the Ashby report on education set out the case for universal education with a class size the same as the US. As Stolper noted, the report was valuable just because it enabled his planning unit to make the calculations which showed that the real and monetary costs to the economy for such educational investment would have been so startlingly large, that it could not be done all at once.³² Other transport or large prestige projects also fell into this category. Stolper was too late on the scene to influence

³⁰ Draft of the *Scientific American*, article, Stolper Papers, box 4, file “Scientific American,” 20.

³¹ For example, in a 1969 working paper reflecting on the crisis in development planning, he commented ironically on the endemic problem of corruption: “In Nigeria the planners had to help the responsible and able civil servants in the Ministry of Finance to restrain their minister whose exuberant spending nevertheless quite frequently showed a cunning and almost instinctive appreciation not merely of his personal but also of the economy’s gain! (Stolper, 1969: 36)

decisions about the Niger Dam project, but the economic costs and benefits of its various elements, and the political importance of this North-South project, were a continuing and worrying item in the planning process. A more serious danger were those projects which he thought had no obvious economic benefit but were just very expensive symbols of statehood: for example, some had expressed the desire for a new national (or possibly shared West African) commercial airline service.³³ This was a project of which he was extremely wary, believing that jets for commercial use would engender the desire for an air force, and this was an even more expensive luxury.

Yet, he was also especially anxious to avoid a plan which would involve great underspending. He learnt to expect underspending during the early years of the plan, apparently because in this kind of environment, projects chosen for support turn out to be not immediately viable despite all his efforts at ensuring that they were before he stitched them into the plan, or that they were just not ready for their planned slot in the timetable.³⁴ A certain amount of underspending was not only expected but desirable, as it allowed the plan to retain flexibility to allow other elements to come in or to cope with unexpected cost increases, or failures of forecast returns. But a large underspend would call the plan into question, reducing public and political support and so ultimately, economic control.

Planning was Stolper's responsibility as Head of the Planning Unit. He believed that planning ought to increase individual well being, but he had no pre-specified set of targets, let alone a blueprint based on some development theory that had to be followed rigidly (see his 1962); nor

³² *Diary*, 2003: 81.

³³ *Diary*, 2003: 75, 147 & 153 also relate how aircraft sales men regarded the planning office as one of the groups that had to be persuaded to buy their aircraft.

³⁴ This is the opposite of the experience found in some centrally planned economies where "mobilisation" was so successful, that the economy over-reached its initial planning targets; I thank Peter Howlett for pointing out this difference in plan performance.

was planning simply a schedule of capital projects funded by international aid or a programme of governmental expenditure. Rather, Stolper's aim was to create a plan that would move the economy towards self-sustaining growth: this meant looking for steps that could increase the usefulness of the resources of the economy and that were within the overall capacity of the economy. Making this plan, not carrying it out, was his mission.

5. Planning Circles

As the date of delivery of the plan became more urgent, Stolper's diary entries show he became more obsessed about his mission. The intensity of his work, and his emotional involvement in his mission, provide a revealing spectacle, giving insight into his actions and the nature of such missions. But the historian reading his account does not only come to see planning through his eyes, but finds her own eyes drawn to the unusual display of detail in his account that reveals the political economy of the whole planning project and the technology of applying economic science in the field.

That "all economics is political" is a statement that is easy to make, and to believe in this case: for all planning decisions are about the use of resources. But how exactly does this political dimension play out in such an economic planning process? First we need to know something of the structure of the planning process. Here, it is important that there was not one single centre of planning, where technocrats sat hunched over their calculators, crunching numbers in isolation from both politicians and economy alike, planning the ideal economic path to development. Nothing could be further from the truth of this case. Stolper was indeed head of a small technocracy in his planning unit, but there the accuracy of description ends. He acted at the centre of many "circles of calculation" within which political information and economic calculation could not be

easily separated. These circles proved critical in the Nigerian planning process. First there were the everyday working circles of all those involved in different planning teams in Nigeria. Then there was the fact that those actors kept changing as they cycled round onto other tasks in the process known as “Nigerianization.” Finally, there was the constant stream of visiting missionaries circulating through Nigeria from overseas. We find the political present in every detail of his daily accounts of working through these various planning circles (see Figure 1, below).

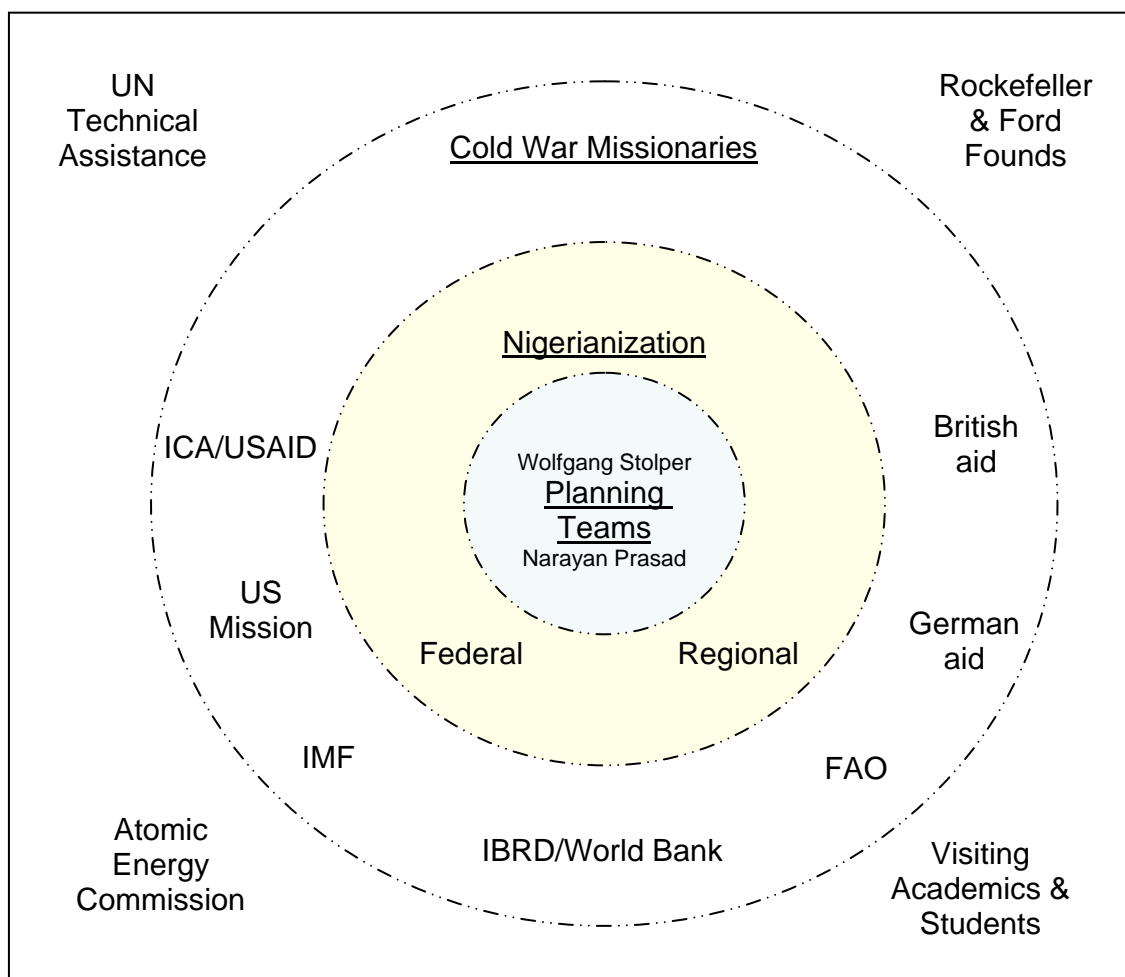


Figure 1: Stolper's Planning Circles

Stolper's immediate planning team consisted of two other Americans and several Nigerians. This was his home domain, his own

circle of information and calculation, which offered the usual kinds of tensions and differences of opinion between colleagues working closely together under immense time pressure but without control over the inputs of information they needed or how the outputs would be used by their political masters. Although he was responsible for the plan to his Minister of Economic Development and to his Permanent Secretary (the chief civil servant in the ministry), he also had to interact closely with Narayan Prasad, the Indian “Economic Advisor” to the Prime Minister, who was not responsible for planning but for giving economic advice at a higher political level than Stolper. Prasad also chaired the JPC (Joint Planning Committee) to which Stolper reported, so that this was an important axis within this circle, and was far more difficult than any other work relationship.

As well as this immediate circle, Stolper’s decentralized planning ideals meant that his group worked with Federal civil servants across different ministries, Federal politicians in those ministries, and with the parallel set of such civil servants and politicians at each of the three regional government levels. Recall that these relations were important for the acquisition of information about the existing capacities of the economy and its possibilities for development or growth. In addition he had to get information from them about the projects that each of the different ministries and different regions wanted to undertake within the 5-year plan. Much of the information that the planning unit needed was not even in these government circles, but had to be gained from those in the agricultural marketing boards, the port authorities, industrialists, farmers and other economic actors. Yet all these can still be thought of as part of the wider Nigerian planning circle - a set of other teams with which Stolper’s planning team interacted.

As if this was not complicated enough, the people involved in these intermediate and wider circles were forever changing, as the Nigeria

bureaucracy underwent a process of “Nigerianization.” The British civil servants were being replaced by Nigerian ones, and it was part of the career path (inherited from the colonial administration) that civil servants regularly rotated from one job to another. As a result, Stolper worked with three “permanent secretaries” (these first two civil service heads in the ministry were British: Charles Thompson and Toby Lewis, and the third, a Nigerian, Godfrey Lardner, who had worked on the original national income accounts with Prest and Stewart) and three different ministers (Alhaji Shagari, Jaja Wachuku and Waziji Ibrahim) during his two year stint, as people moved round or up the system. The same process of Nigerianization and political movement was happening in each of the regional government levels. And in the midst of all this changing of personalities, Nigeria was also experiencing a jostling for power between the regions, and between the regions and the Federal level.³⁵

Stolper had to persuade each new minister, and each new civil servant, not just in his ministry but in all the other ministries and in each region, into relations of trust in order to gain their collaboration for information flows, in order to elicit their preferences for projects, and in order to gain their agreement with his assessment of those projects, that is, into his whole way of thinking about planning and the plan’s content:

The actual planning process started, therefore, out by seeing all the ministries and statutory corporations in all the governments, finding out what they thought they were doing and what their plans were; finding out why they wanted to do what; what they hoped to achieve; why the particular approaches were in their opinion preferable to others; in short it started by trying to pick their brains while simultaneously setting it to work in the desired direction. There is no doubt that in many respects the

³⁵ The political situation was affected also by events elsewhere in West Africa (for example in its near neighbours, Ghana and Chad) as well as the pan-Africanist movement.

accomplishment of the Plan, such as they are, are not found in the plan itself, nor even in all the things that might have found their way with it but were eliminated in the process or formulating it. The real accomplishments were frequently in the unspectacular change that occurred in some Ministries in the manner in which they themselves approached their tasks. (Stolper, Draft for *Scientific American*, 1963: 22)³⁶

A third planning circle was created by the remarkable number of visits from “Cold War” missionaries circulating through Nigeria. Such international missions during his period included visitations from official government and international agencies such as the FAO, IBRD/World Bank, IMF, ICA/USAID and other US groups; from commercial interests with aid links from places such as Germany and Switzerland, and technical aid from other interested parties, such as the Ford Foundation, and so forth. All these missions wanted to “help” Nigeria on its way, but they had different interests and different requirements, asked for different kinds of information and required different kinds of persuasion, and had the potential to offer different sorts of “development aid.” Unlike the three kings bearing gifts, those offering aid to the new state first preferred to check that their proposed gifts were likely to be well used (though donor-recipient commitments were not always explicit in the client states of the cold war in this earlier period). These missions to Nigeria were even matched by a reverse mission: a group of politicians and senior civil servants sent from Nigeria in the summer of 1961 on an “Economic Mission” that travelled to both superpowers, their satellites, and the international agencies in order to gather promises of aid, sometimes for particular projects, sometimes for particular technical assistance. All these missions had a strong purpose, but they differed in those purposes.

³⁶ Draft paper for *Scientific American*, Box 4, File “Scientific American,” Stolper’s Papers.

Some remained mysterious: for example, ostensibly it arrived to help the Northern region with its development plans, but just what did the International Atomic Agency Commission mission want? Less onerous, but still significant, were the visits of students and professors. Not all professors were always welcome, though Jan Tinbergen's students on study tours of Africa were amongst those that were. Each mission had a different agenda and different aims and - as head of the planning unit - Stolper had to meet with them all.

We can get a good idea of how insistent these three planning circles - his immediate planning team, the wider Nigerian circles of politics, and these international missions and visitors - were to Stolper's life when we construct an average day out of his diary. Typically he would begin work at 8am with meetings at ministries or with civil servant from the Federal or regional offices, or working with his immediate team in the planning unit office on some set of calculations, followed by further such meetings until 1pm, at which point he would probably have a lunch with a visiting missionary or with one of the other ministry's civil servants. Lunch would be a slow affair, and if he were lucky he could snatch an hour playing music before meetings began again at 5 or 6pm, often interrupted by another working-cum-social event at 7 or 8 often with a visiting mission member, followed by another at dinner nominally at 9pm (but which sometimes did not begin until 10pm), and home at 1-2pm. Most of his social time was also spent with others in these planning circles so even the beach barbecues or the night-club visits would involve talking, cajoling, finding stuff out, arguing with others, and discussing problems and strategies. It is no wonder that he complained of lack of sleep. His own calculating activities were often only viable in the peace of home work at the week end.

This punishing daily cycle entailed many arguments - with other ministries, those from other regions, and, most awkwardly of all, with

Prasad, Economic Advisor to the Prime Minister - about how to do planning. Prasad had been brought in from the World Bank, for in breaking away from the colonial power, the Nigerians wanted an adviser with experience of underdevelopment. But it was not clear how far Nigeria was like India either politically or economically. Stolper admired Prasad's political skills but not his economic intellect. They had many political battles over their respective ranges of responsibility and scientific battles over economic policy.³⁷ And he was most fiercely opposed to Prasad's version of planning.

As far as Stolper was concerned, Prasad viewed planning as a series of investment projects and encouraged politicians to dream about big projects, promising them that money would be always be forthcoming (presumably either from the international missions, or from the domestic printing press) and that everything would be OK. It is true that project planning was, at this time, the main development recipe of the World Bank. But Stolper was adamant that this was dangerous not just because it raised the wrong expectations amongst politicians and people, and encouraged lack of budgetary control, but primarily because it took no account of the aggregate resource constraints within which all the projects had to fit:

Where I differ is firstly a matter of principle and secondly one of tactics. Regarding tactics I believe it is highly dangerous to tell politicians who can't tell the different between £10 million and £100 million that somehow the money will be forthcoming, as I heard Prasad say to Eastern Region agriculture minister Okeke. The principle involved is the question of macro vs. project planning. (Stolper, 2 July 1961 *Diary*, 2003: 139)

³⁷ One of Stolper's worries was that the plan should not lead to either the risk of loss of fiscal control or to the kinds of monetary and exchange rate disasters that often occurred in developing economies. He was strongly apposed to what he saw as Prasad's apparent willingness (as reported in his diary) to let Nigeria fall into fiscal and monetary problems as a

In Stolper's view, Prasad's planning involved no constraints and no responsibility at macro level, and perhaps no real micro-analysis at the level of physical resource planning. For Stolper, this was a "no theory" approach to planning!

This battle in ideals was not a private one but invaded the planning process. It was picked up in a neat way in the 1961 newspaper text mentioned earlier: "Wanted: Planned Economy," which found a way to comment favourably on Stolper and criticize Prasad - both anonymously of course:

Today, Nigeria has the advantage of having some intelligent economists. We hold the view that on the important question of laying the economic foundation of our new nation, they should be called upon to contribute their quota, after all what we need is the best for Nigeria. It is true that the Federal Government now employs the services of an Indian economist of international standing on a salary of five thousand pounds (tax free) yet we feel that team work with Nigerians will produce better results. (*Wanted: Planned Economy*, 1961)³⁸

(The salary attributed to Prasad is pretty startling, and that is why it is presumably mentioned here for the text also notes that a Nigerian worker earns the equivalent of around £1 per week, and an executive around £12 per week.) The final positive remark about "team work with Nigerians" is of course a reference to Stolper's decentralized planning mode and his own team which also included some Nigerian members.

Stolper won the battle, but it was a near thing. After much political activity and successive re-calculations of the plan, and its extension from five- into a six- year plan (to avoid political difficulties over where to cut

way to learn how to avoid them in future! See *Diary*, 2003: 93 & 139.

³⁸ See note 3.

the plan),³⁹ Stolper's plan was accepted by the Council of Ministers and passed in the Federal Parliament on 4 April 1962. But even after this apparently final moment, indeed, right after acceptance by Parliament and in the process of its final revisions (to incorporate the final figures from the regions) so that the plan could be published and sent off to the consortium of aid agencies, Prasad managed to alter a crucial assumption and figure in one of the macro accounts while Stolper was away.⁴⁰ These final figures had suggested that either expenditure would have to be cut (a difficulty given that the plan was already agreed domestically) or that consumption would have to be cut (not just politically dangerous, but against the whole aim of Stolper's plan which was to increase individual well-being). To find a way out of this bind, Prasad had arbitrarily assumed a larger underspend. From Stolper's perspective, not only would such an underspend have been unacceptable to the donor community, but the assumption itself created inconsistencies in the plan, which in turn meant that it could not be sent to the donor community, nor could it be used for action domestically.⁴¹ These implied consequences caused a huge political problem for Stolper: he was obliged to take his fight to the top levels of the political system, and spend many frantic hours recalculating the main aggregates of the plan again, in order to re-establish consistency for it to remain acceptable to the Nigerian Federal government and be ready for them to take to the aid donors.⁴²

The execution of the plan was announced in the Federal Budget in 1962, with a planned expenditure of £677m, half to be supplied by foreign aid from those international missions.⁴³ In the first year, aid donations did

³⁹ See *Diary*, 2003: 226-7.

⁴⁰ This consortium resulted from the 1961 Economic Mission that the Nigerians had sent around the world to gather aid promises and included not just the IBRD/World Bank but even the Swiss and Japanese.

⁴¹ See *Diary*, 2003: 290.

⁴² See *Diary*, 2003: 289-97.

⁴³ Execution of the *National Development Plan, 1962-68* was a whole new set of problems and here, even more clearly than in the gathering of data and expression of preferences, he

not reach their intended level, but, as Stolper expected, there was also an underspend: the flexibility of projects was designed to make that not a problem. The huge price falls in Nigeria's main agricultural exports (vegetable oil and cocoa) turned out to be more damaging to the plan in the short term. But the real problems came from the already emergent inter-regional rivalry that erupted into civil war in 1966, in the middle of the plan's period. Stolper always remained optimistic about Nigeria's economy and its future, yet, because of the political circumstances of the plan's collapse, his missionary zeal and heroic attempts to plan a viable economic direction for the country's future now seem tinged with pathos.

6. Mutable Mobiles and Travelling Facts

Here we have a story about mutable mobiles, a story which offers some important points of contrast to Bruno Latour's 1986 account in which the emergence and power of science are dependent on the development of writing and imaging techniques that stabilize scientific knowledge into various kinds of "marks" that circulate as "immutable mobiles."⁴⁴ Certainly Stolper's economic plan was a mobile document that circulated economic science knowledge around the political planning circles, but the plan's circulation depended on the flexible nature of many economic numbers: that is, mobility depends on mutability, not on immutability. The mutability of these marks derived from the nature of economic knowledge in the context of planning, and it was critical not just to ensure mobility, but to the gathering of allies that would mobilize the power of economic science. Stolper was another critical ingredient here too, for the decentralized kind of planning that he favoured depended not just on local knowledge but on local preferences, so that mutability was

believed that the decentralized economy must take responsibility. "Planning, coordination, and general direction can come from the center; execution cannot." (Stolper, 1966: 13)

⁴⁴ Although this discussion mainly relates to the immutable mobiles argument of Latour 1986, as it goes on, it will come to focus on a parallel kind of "chain of reference" to those discussed by

directly built in to the mobilization process.

6.i Mutability

Let us begin with the mutability issue. There are number of reasons why economic planning facts are mutable which are generic to the problem rather than a particular peculiarity of Stolper's or Nigeria's experience.

First, each planning document contains a set of marks (in maps, words and numbers), evidence about the economy: some are already hardened facts, some are the subject of further research, and some are projected facts. Economics evidence in such planning circumstances often begins with rule-of-thumb guesses, to be replaced by proxies, and then better substitutes. So, even where pieces of economic evidence are expressly collected for a plan, often with great difficulty, they are quickly substituted by others. Thus, the pieces of evidence used in planning do not so much harden and stabilise as become substituted up to the point of use.⁴⁵ They may stabilise given time and often do so over time, for statistical offices typically keep revising the number of past figures on the economy for several years after their first announcement. But for planning purposes, the exigencies of time and politics mean that they are only fixed by the point when the plan is made and acted upon. In other words, rather than being fixed before the plan, the plan itself fixes the facts to be used.

In addition to all this, the economy is not static. As the economy changes, new information appears, so that while each individual mark might be in the process of stabilizing, new less hardened ones keep joining the process. There is never enough time for absolute certainty, and if time is allowed for them to harden (that is, to be come more certain

Latour, 1999.

⁴⁵ I thank Patrick Wallis for a discussion on this point.

and more accurate), many of those facts would be out of date and so of no use for the task. Even then, once execution starts, they will invariably alter again.

Second, many planning numbers are marks about the future not the present nor past, and so it might be tempting to argue that these mobiles are mutable because they never can be fixed economic knowledge. This misses the point: a plan can be defined as an outline on which you act; it depends upon a set of evidence that has sufficient validity for action rather than on known and immutable facts. Just as our facts about future climate change, for a long period appeared quite mutable and uncertain, now appear sufficiently certain to most of us that they have prompted actions: we know they are not immutable, but they are sufficiently definitive to be taken as facts.⁴⁶ Under what circumstances do such facts about the economy of the future harden enough to gain the fact-like status that enables people to act upon them? We shall return to this question.

Third, transformation of marks is an inevitable part of the process of economic planning. In this Nigerian case, local practitioners provided incredibly detailed information on topics ranging from the fisheries in Lake Chad, the production of chocolates, the pressing of oil, the cost of building homes, the numbers of teachers in training, and so forth. Some came from local data collection efforts with large amounts of uncertainty, as we saw in the example of the Western region's agricultural survey. Some came from external reports on transport (from the Stanford consultancy) or education (the Ashby report). But all of these were subject to further analysis by members of Stolper's unit during the

⁴⁶ For a parallel account of political and scientific interaction in the travelling of facts, see Oreskes, forthcoming.

planning assessment. Their analysis transformed these bits of primary evidence or facts into a form suitable for a place in the plan, thus creating a secondary set of economic numbers or facts (marks) to be circulated around.

Fourth, as different ministries decided different priorities and different politicians made preferential decisions “outside” the plan which had to be taken account inside the plan, the individual sections and assessment were revised, but so too, the overall plan had also to be continually revised. Since the people making these priorities were also changing jobs in the political system, the individual sections gained an additional mutability.

So, as these planning sheets travelled around the circles of political economy, they were continually revised for lots of different reasons. The marks on planning sheets were mutable: because the scientific subject matter was mutable both in terms of the nature of economic evidence and the nature of projects; because of the process of planning itself; and because of the mutability of those involved in the planning process and their preferences.

6.ii Mutability and Mobility

Mutability and mobility are causally linked in this micro-history. Stolper’s planning documents are mobile only because many of the facts (or numbers) that they embody are mutable. If these documents could not be updated according to economic changes and local economic knowledge, they would not have been circulated so willingly, and if they did not accommodate changing local preferences, they would not gather enough sufficiently powerful allies that would eventually get the plan adopted by the Council of Ministers and then the Parliament. The

circulation of these documents was thus critical to their ability to gather power and the mutability of their elements critical to their circulation.

This link between mutable numbers and their mobility was well understood by Stolper. From his point of view, this mutability was not a sign of error or failure in economic science, nor of political interference in his economic expertise. On the contrary, it occurs because he constructed a planning process which was decentralised in knowledge and in preferences and centralised only in putting that knowledge together within the overall picture. Stolper was firm in his belief in decentralization at the level of information, preferences, and execution. On the first point, he argued that you had to know about an economy to plan it, and that required an investigation into local knowledge:

It cannot be repeated too often that economic development refers to a specific country in specific circumstances of time and place, and policy prescriptions must spring from the recognition of the historic uniqueness (Stolper, 1966: 7.)

His planning process, as we have seen, relied on gathering together and circulating the knowledge of the specific time and place - the kind of economic knowledge, which Hayek described as inherently local - and fitting that local knowledge together using his own economic scientific knowledge of general rules by which an economy works.⁴⁷ So, while the plan was put together by his immediate planning team at the Federal (central) level, it was not central planning. The sense of “central” that is relevant here is the conceptual and scientific knowledge of how economies function compared to the locally held economic knowledge of

⁴⁷ Hayek distinguished between scientific knowledge and local knowledge in economics. In his view, socialist planning would not work because most of the detailed knowledge necessary for economic planning is not held in the central bureaucracy nor in the economic scientists but by participants in the local economy. These ideas are contained in a series of essays in the 1940s of which the most relevant here is his 1945 essay on knowledge; and while Stolper did not reference Hayek’s work, the latter’s notions of local knowledge, market mechanisms as signalling devices, etc are clearly evident in Stolper’s first chapter of his 1966 book, there and there is no doubt that he would have been familiar with them.

how to make and sell things in particular markets. This illuminates the meaning and relevance of Stolper's claim to be using economic "theory" versus Prasad's project planning.

From the point of view of the "allies," their support for the plan depended upon the mutability of most of the details - but not on the macro-economic framework that Stolper used to determine the overall constraints on the set of these mutable elements. Their knowledge, or evidence, was geographically and chronologically and sectorally specific (eg about education, health, transport etc). Recall also that, following Tinbergen's lead, Stolper's planning was also decentralized in political preferences, so that elements in the plan were also locally dependent. Evidence and numbers, plans and projects, began in various different local ownership, and these "owners" were also the allies that had to be convinced to accept the plan. Since all these details could be updated, both local knowledge and political preferences could be accommodated, and so these owners became potential allies *during* the circulation of the documents.

From Stolper's point of view, the circulation of these mutable pieces of evidence was the way that allies were created. Alliances were heavily dependent upon the trust built up between Stolper's centre of calculation (and his method of planning) and those in the various planning circles who gathered the numbers and propose their planning choices. He was well aware of this, as we see in the many entries in his diary about discussions with civil servants and the political actors in the network where he tried to persuade them both to share their knowledge and to accept the transformed numbers that he sent back out from his calculations with their numbers. All of these discussions were his way of co-opting these allies into accepting the outcomes of his science, his mode of planning. As he wrote soon after his return to America:

When the plans [from the regions] were submitted we asked for

pl_____ of capital works and its justification, the additions recurrent cost generated, the manpower needed, foreign exchange components, where applicable tax revenues, the cash flows and so on. The answers could be coordinated, would lead to questions, to suggestions, to quarrels, to successes and failures. But with all its failures the Plan does represent a consensus, it represents ambitions both at the grassroots level and at the top level. And it tried in this manner not only to utilize all the knowledge that could be found, but to allow for the much better knowledge of social and cultural factors than could be done by imposing views from the top. The Plan emphasizes productivity, profitability and growth, and has little explicit mention of social and cultural factors, and it was accused of having no heart. Yet the heart was there, though not worn on the sleeve. (Uncorrected typed draft for *Scientific American* 1963: 23)

Somewhat similar processes of circulation and alliance building were at work with those international aid agencies on various missions. Recall that each visiting mission had a different agenda and required different information. Because these missions held different views about how planning should be done, Stolper's meetings with them involved both technical discussions and persuasive purposes. We can see an example of this in the attempts by the Nigerian planners to persuade the US mission lead by Arnold Rivkin, who originally demanded a full plan before the US would commit to giving development aid.⁴⁸ Nevertheless, the mission had barely reached home when the news came that they had agreed to provide \$225million on the basis of the "constrained" aggregate

⁴⁸ It is not really clear which US organisation originated this mission - whether it is the ICA/USAID or the State Department or the White House (see Stolper, *Diary*, 2003: 107), but it

plan produced by Stolper, without even having his list of the detailed and still mutable proposals that made up the plan and in preference to a fixed list of prestigious projects that Prasad believed the relevant material of the plan and for persuasion. For this particular US mission, the acceptability of the plan lay in its scientific framing, and it is here that they sought stability. No doubt it helped considerably that there was already a strong trust relationship between the head of that mission, Rivkin, and Stolper, for they had been colleagues together at MIT in 1958-9.⁴⁹ So, in contrast to Latour's account of science in which immutable mobiles enable weak manipulators of inscriptions to dominate the world, here we have a rather strong manipulator - indeed in Stolper a very obstinate and persuasive manipulator - of mutable mobiles, strong enough at least to deliver a plan that would pass the economic and political hurdles, though economic historians may well doubt that his plan really dominated the future of the Nigerian economy. Or, to put it another way, the Nigerian plan exhibits what Donald Mackenzie (2006) calls "generic" performativity (economic knowledge used by participants in the economy) but whether the plan affected the Nigerian economy and succeeded in "effective" performativity was more doubtful.⁵⁰

6.iii Mobilisation and the Fact/Fiction Relation

"Mobilisation" was the term used by the Minister of Finance to

clearly had powerful backing.

⁴⁹ It is this connection that presumably lead Grubbs (2006) to blame the pair of them for the general failure - as he sees it - of the Nigerian state in both political and economic terms in the period after the plan's announcement. Grubbs offers useful insight into the role of Rivkin in the discourse and power groups concerned with African modernisation from the American side, and touches on the local reception and later analysis of Stolper's plan in terms of the political history of relations between Nigeria and the US. This present study (while clearly more sympathetic to Stolper as both an economic observer and actor in the Nigerian economy) concentrates on the planning process itself, and on the basis of this, it seems doubtful to see how these two Americans could be solely responsible for the entire set of Nigerian economic problems of the post-colonial period! See Engerman et al (2003) on the American modernization thesis.

⁵⁰ Amongst the commentators on the plan's outcome, see Helleiner, 1966; Kilby, 1969; Eicher and Liedholm, 1970; and Dean 1972. Green 1965 compares the planning mode and the outcomes of the Nigerian plan with those in Kenya, Ghana and Tanzania, but seems poorly

announce the start of Stolper's economic plan to the Nigerian Parliament in 1962. "Mobilisation," in Latour's account (1986), refers to the power to make others believe the marks of science, and so act on them. Whereas in his account, mobilization depends primarily on those evidential marks of science being immutable, here, we have seen that gathering powerful allies in the Nigerian economic planning process was associated with the mutability of the elements of evidence. And whereas Latour's mobilization depends upon three further characteristics in his marks: those of presentability, readability and combinability, the focus here is on an additional virtue that Stolper emphasized in his economic planning: namely that of *consistency*, an important quality that enables planning facts to mobilize allies.

One of Latour's examples is the French statistical office, INSEE, within which all the marks of the economy are gathered together and combined with each other in the set of national income accounts (NIA) from which the gross national product (GNP) figures are constructed. But more important than their combination for us is that these national income accounts present something that economists think of as a consistent picture of the economy, one in which everything countable is accounted for, none of them is double counted, and those elements that are supposed to balance do balance, all within a particular way of understanding the economy. Consistency is a fundamental requirement of these accounts in the same way that business accounts must add up, balance, so forth.

We are so used to using national income accounting notions nowadays that few realise that these accounts are constructed according to one particular conceptual portrait of the economy (there are others), one in which we see the economy as an integrated system within which aggregate or macroeconomic level behaviours are important to the way

informed about the planning mode.

the economy works. Stolper's planning depended upon this conceptual framework but in a more complex form. Usually, these portraits are reduced to one format by translating everything into monetary amounts, but Stolper's plan depended upon his ability to *create* consistency within and between both physical and monetary resources, and between current and future resources of both physical and monetary kinds in the context of a changing economy (one which, if all went well, would also be changing as a result of his plan).⁵¹ The plan relied, as Stolper noted, on a considerable degree of imagination in the context of a developing economy where few marks were readily available compared to the well established statistical apparatus and factual basis of French indicative economic planning at that same time.

The marks, the numbers, the facts, of economic planning, can be envisioned by participants as consistent only because they are seen and understood within a particular framework. Latour (1986) does not ignore consistency, indeed, he understands it in quite an interesting way as the provision of a perspectival framework. He points to the consistency frameworks established in early modern Europe. Ivins' thesis (1973), for example, suggests how linear perspective provides a framework within which the inscriptions of mechanics, physics, and architecture, as well as those of the imagined worlds of artists came to be consistently expressed with each other. Alper's (1983) "art of describing" that appeared in Dutch art, society and science, provides another framework for understanding and seeing the consistency of inscriptions across all these fields. These two expansive perspectives offer a framework for describing and imagining that covers both science and art, fact and fiction. As Latour points out about them, such frameworks offer considerable organising power - at a meta-level - over the ways in which inscriptions are seen and

⁵¹ This of course is an order of magnitude more complex than the consistency outcomes that INSEE needed to establish in producing their national income figures.

understood: “visualized and cognized” (to use his terms).

Here with our micro-history of economic planning we are working on a smaller disciplinary canvas, but with quite an ambition, one in which the description of the current economy and imagination about its future came together in a similar kind of “perspective making” in Stolper’s planning. It is worth probing this dimension of consistency. Planning of any kind involves certain facts about the future - we can call them “fictions,” and the question we raised earlier in this paper was how do these economic fictions become reliable enough - sufficiently fact-like - that people will act upon them? In Stolper’s form of economic planning, the answer is that those fictions have to be made consistent with the particular facts of today while the nature of the consistency depends upon the economic theory involved. The art of economic describing using the NIA provides a conceptual economic form of perspective within which planning can be done.⁵² As we have seen, in planning, the microeconomic facts of the individual project plans have to be made economically consistent within a macroeconomic picture of the economy that can be constructed on current and past facts, only then can projections about the future be seen as future facts of the economy. Now we see that even though the individual facts (current and future) were flexible and constantly subject to alteration within the planning circles, once embedded in the macroeconomic plan, they had a particular perspectival relationship to each other, one of consistency.

This consistency of facts about the future: fictions, with current facts, that Stolper was able to create and describe in his plan was necessary for the other people involved, inside and outside Nigeria, to understand the economic plan, just as Ivins argued, a particular kind of

⁵² It is not the only form of perspective within which the economy as a whole can be described and imagined, for example, input-output tables offer an alternative perspectival framework, while van den Bogaard (1999) shows how econometric models can fulfil the same functions of bringing past and future facts together. See Morgan (forthcoming) for a further examination of

perspective - linear perspective - allowed people in the early modern times to understand art and mechanics as part of the same consistent world view. It is this consistency that creates credibility. The plan depended upon the economic actors accepting a future portrait of the economy depicted in a way that was consistent with the current portrait of the economy - if they were not consistent, the plan would lack credibility, just as something that is not drawn in the kind of perspective that we are used to does not look realistic. Stolper's planning facts and fictions only circulated through the final difficult political territory when they accompanied each other in this consistent form within the plan. These facts and fictions of the economy made good travelling companions for each other: they enabled those involved to see and to understand how a current and a future economy fitted together. So, it seems, future facts will only travel well - in the sense that they will only be mobile and accepted by the various planning circles as reliable enough for action - when made consistent with other facts, namely, the facts about today and facts about yesterday.

Mobilisation - acting on the plan - relied on this virtue of perspectival consistency. Mobilisation required sufficient belief in the scientific evidence for users to act: Stolper's economic plan needed to provide a reliable or credible form of economic knowledge, and consistency was the hallmark that attested to this kind of reliability. It is this consistency which Stolper sought to preserve in each new circulation, rather than the integrity of any particular element or link in the plan: the consistency not just between the parts of the plan but between where the economy is now, and where it might be in the future. This is why Stolper was so upset and angry at the final moment when Prasad's action in changing his figures made the whole plan inconsistent; he wrote in his diary: "The whole point of a consistency test is to see whether consistent

the perspectival qualities of the NIA framework.

assumptions yield consistent results - which they did not!" (Stolper, 2003: 290) An inconsistent plan for the future, by infecting the facts about the future, would cast doubt on the integrity of the facts that went into the planning documents. Inconsistency in this context did not just break the chain that binds the past and future facts together, but had the potential to unravel the links all the way back through the chain undermining the past and future facts which had travelled together around the planning circles in the making of the plan.⁵³ Without consistency, as Stolper clearly saw, the plan would not mobilize, and his mission fail.

⁵³ It is at this final point that my argument suggests a link with Latour's (1999) claims about the role of chains of evidence in creating the "reference" relation between words and things in science. Stolper's chains of economic evidence are chains of reference, but in this case, they extend from the future facts back through the current and past facts about the economy to the raw material from which those facts were drawn.

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