

RESEARCH ARTICLE

“On a mission”: planning an economy with mutable mobiles

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(Received 17 August 2025; revised 17 August 2025; accepted 18 August 2025)

Abstract

When newly independent states in Africa set out to make their own economies in the 1960s, they did so under the label of “planning,” a generic term denoting economic policy-making to create the economic future. This planning was guided by international experts, sent “on missions” to help, or perhaps oversee, local economists in what was seen then as an expert, technocratic process. Nigeria offers an important example of this technocracy at work, under the guidance of its “missionary”: Wolfgang Stolper. His diary, and his writings of the day, reveal how local information and local values travelled around social, political and economic circles, to be then spliced together according to certain economic principles in making a “five-year plan” for the future of Nigeria.

Keywords: economic planning; development “missions”; new states; mutable mobiles; national accounts

1. Introduction

How do you refashion an economy? When a new state emerges out of an old colony, economic transformation is not a necessary by-product of the process, but the desire for such transformation is strong. Yet this is by no means an easy task: How do you refashion an economy? What kind of an economy can be made here? What degree of choice can there be in such an ambitious undertaking? How might such a future be fashioned? And, who can 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. (*Diary 2003*, 2)¹

¹There are two versions of the diary, a published version, edited by Clive Gray, labelled here and throughout the paper as *Diary (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”). My thanks to Clive Gray who kindly filled in some of the later history of Nigeria’s plan.

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 these remarks are in his nearly two-year assignment—Stolper's sense that he would experience some minor hardships, but also widen his own knowledge from being "on a mission."

As we might expect from the specific political context: we cannot just regard this as a prosaic exercise in economic management. On the contrary, it was planning the economy of one of the largest new states in Africa, in which the idea of "development" signaled looking forward, away from the colonial past. We see these high hopes in a clipping found in Stolper's papers, which he had clearly torn out of a Nigerian newspaper in late 1961. Under the headline "Wanted: Planned Economy," it describes planning as the "technical know-how for the building of a strong, proud, free and prosperous Nigeria."² Similarly, the Minister of Finance, introducing Stolper's Development Plan in his "Mobilization" 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 1963a, 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 sounds like a crusade, appropriate for a mission setting out to make something anew.³ The Minister's carefully chosen budget label of "mobilization" strikes a military note, while the plan's stated aim: "a modern, diversified and virtually self-sustaining [economic] system" offers a utopian, but unspecified, vision of the future. But, as we shall see, his mission leader, Stolper, was first and foremost a technocrat who preferred a collaborative approach, and sought to avoid utopian schemes.

This Nigerian planning project not only allows us to explore aspects of this interesting phenomenon—the "economic mission"—but provides the opportunity for a micro-history of how economic science is used in interventionist mode. The case materials enable us to investigate the interaction of evidence and theory in the policy planning domain and how it depended heavily on a calculating tool, or rather upon a whole technology of calculation, based on an accounting framework.⁴ The case illuminates the political economy, in a very immediate sense, of how economic science is used in a situation where context is also content, and where the local information and choices are essential to the outputs using that technology of calculation.

The context of this particular "mission" has two elements that will turn out to be important for the plan's content. First, across Africa, there were many newly independent countries, each

²Stolper'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.

³It 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 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 (e.g., UN, FAO, IMF etc.) from the mid-twentieth century onwards. For example, according to the historian of the IMF, James Broughton, IMF visits of investigation and advice-giving were always called missions, right from the beginning of that organization'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! (James Broughton, in email communication, 23rd February, 2008). See Fearn 1959 and Beckerman 1956, for comments on economic missions at the time; see also papers on economic missionaries by Morgan, D'Onofrio and Tyler, and Betancourt, in a recent collection on the history of travelling economists edited by Boianovsky and Maas (2022).

⁴The most notable works from the sociology of accounting that frame this account are Power 1997 and 2004 and Miller 1990 and 2001.

wanting to forge its own new path not only as a state, but also as an economy. And though there might be general recipes for development, each country's economy was different and so needed to plan its own specific path. Second, this was a period of wide belief in the applicability of technocratic analyses and solutions in economics (see Duarte and Giraud 2020, and Morgan 2020). In the context of the Nigerian project, this meant the use of standard tools, techniques, and frameworks of calculation that aggregated up lots of numbers, but these numbers were full of local content.

Content and context are not easily separated out in this technocratic practice. This mutability stands in contrast to Latour's notion of "immutable mobiles": stabilized records of information that form an important feature in the development of scientific knowledge (1986, 7). The technocratic processes of planning depended on the mutability of the numbers passing back and forth between periphery and center, where calculations pull all the local numbers together, not just to aggregate them but to balance the desires of competing local needs determined by local contexts. This mutability as the planning numbers went back and forth is a key to the technocratic practice here, and its several dimensions will be explored more clearly in the final section of the paper.

2. Development planning

Development planning grew out of several ideas of the late 1940s and 1950s, and came from a number of different economic contexts. First, the notion of "development" itself was a largely post WWII idea indicating economic changes in structure or "modernization," as distinct from merely economic growth. Second, "planning": 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 economic dislocations and crises of the interwar period. Third, the planning experiences within the warring countries of WWII proved that economies could be successfully reorganized to achieve certain aims. Finally, the relatively speedy reconstruction of war-torn economies following the war perhaps suggested that other economies, including those that were judged "underdeveloped," could—through planning—reach a better position rather quickly and effectively.

Yet not all planning was focused on development. Most planning at that time lay somewhere between the three extremes of the Eastern bloc's central planning (controlled production via controls on capital, labor and organization of work with output targets); French "indicative" planning (that depended on capitalist producers understanding and voluntarily following state targets); and the simpler forms of public expenditure planning. The point is that, at this time, "planning" was a broadly accepted term for all kinds of active, technocratic government engagement to improve the national economy.

"Development planning" reflected a specific target of these various planning modes and aims. Yet what "development" meant was still not entirely clear in this period, 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.⁵ There was a wealth of ideas and arguments about how to go about planning development. A UN expert report from 1951 offered an analysis of the contemporary approaches, their techniques, and the priorities and difficulties of planning. 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

⁵Many of these histories are participant histories; even the UNDP and World Bank had their own participant history. See references and discussion in Morgan & Bach 2018, and Kapur et al 1997. Many further references are given in the earlier working paper, Morgan 2008. See also the collection edited by Alacevich and Boianovsky 2018, and the many papers and references therein on the history of development economics.

international resources; and over the relative ordering and speed of developmental policies. Different international institutions, research centers and individual economists each had their own preferred way of going about planning, for there was no universally agreed-upon 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, and 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.⁶ This variety of questions and experience was used to buttress arguments about different kinds of planning, which spilled into the Nigerian planning process.

While the definition of what constitutes a developed economy remained vague, the development literature of the 1950s seems to have had less of a problem defining “un- or under-development.” Moreover, there was a very widely and strongly-held belief amongst economists, governments and international agencies in the 1960s and 70s that such underdeveloped countries could indeed become better off by making use of various forms of economic intervention and direction (see Morgan and Bach, 2018). 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, as “economic missionaries,” 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” to plan the economy came from outside Nigeria. Unlike Stolper, they were usually on short investigative trips, more like military sorties than his long-term 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 1960s, as the old European powers withdrew from Africa, the new superpowers helped to reconstruct those old economies in order to grow new economies in their own image. Client states replaced colonial states where new allegiances were recognized by their economic stance as much as their political one. 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.⁷ It is one of the ironic paradoxes of the cold war era that it was thought 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 (Morgan 2003). But those newly independent states knew how to play this game; they were very smart in using the Cold War to their advantage in seeking funds from both sides, sending their own “reverse missions” to both Eastern and Western powers to gain donations for their projects.

The “de-colonizing” agenda was often—on both sides—more of a political economy agenda than an economic developmental one: the old colonial powers wanted to cut off their dependencies, and the ex-colonies wanted to forge their own path (Cooper, 1997). Rather than making a wholesale change to the nature of the economy, this might mean just reducing economic dependence on the previous colonial state as the main economic partner in trade, and perhaps even adopting an “import-industry substitution” recipe, as some of the Latin American countries did. But while some African ex-colonies toyed with the notion of an “African socialism” (perhaps following Eastern European models, such as Ghana under Nkrumah or Kenya under Kenyatta),

⁶The literature on the intersection of “planning” with “development” and “aid” and their histories as ideas and in practice is enormous. Three very different contributions, and the references therein, give a sense of the extent of that breadth and depth. First, the history of intersection of “planning” with “development” within the social sciences up to the mid 1990s is well-covered in the editors’ Introduction of Cooper and Packard 1997. Second, a more eclectic collection of essays on “planning” in many different forms, times and places is found in Blacker et al. 2024. Both of these offer some engagement with the colonial-independence agenda. Third, an analysis of the changing views and outcomes of “development aid” from the 1950s onwards and from the economists’ standpoint can be found in Temple 2010.

⁷We 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.

the possibilities of regional groupings, and even pan-Africanism, seemed more alluring (Speich 2009; Getachew 2019). In practice, most development planning in African new states was either project planning (funding individual investment projects, often from outside international agency donor income), or the more technocratic national-expenditure-based planning based on national accounting systems. For Nigeria, it was the latter.

3. Our “missionary” and his “mission”

Wolfgang F. Stolper was born in 1912 in Vienna, Austria and died in 2001 in Ann Arbor, USA.⁸ 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 “missions,” journeys of economic investigation, analysis, oversight and program design for bodies such as USAID, the UN, and the IBRD/World Bank (International Bank for Reconstruction and Development).⁹ The path to these activities had begun in the late 1940s with a summer job at the ILO (International Labor Organization) reporting on economic development in Asia, and then, in the late 1950s, the construction of national income figures as a way to analyze the structure and development of the East German economy under planning for MIT’s Center for International Studies.¹⁰ The MIT center also sponsored his first connection to Africa, namely a research trip—to Europe—gathering information from colonial authorities and European Africanists. Thus, Stolper’s Nigerian adventure was both his first direct experience of Africa and his first planning mission.¹¹

When Stolper, a middle-aged German/American economist, arrived in Nigeria on July 17th 1960, a few months prior to its independence after many decades of British colonialism, he faced the challenging, even Herculean, task of constructing a five-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 expatriate advisor, but a civil servant, and his unit was an element in the relatively newly created Nigerian Federal Ministry of Economic Development. Nigeria at that time was 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 very many smaller ones), practiced several of the main religions (and fostered many smaller sects), and spoke as many languages. As Stolper soon learned, the new nation state of Nigeria was not one constitutional entity, but several: there were three autonomously governed regions, with their own tribal, ethnic and religious mixes, which were socially and economically distinct. His 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. English was—luckily for him—an unofficial language shared amongst the “establishments”: the educated elites of political, state and economic power.

⁸Information on Stolper 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.

⁹USAID, 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 was an international co-operative institution, the US was the largest shareholder.

¹⁰For his German project, see Stolper 1960a and 1960b.

¹¹His mission activities continued from the 1960s to the 1980s, mainly to African countries.

Stolper left his post on June 3rd 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. And to create that plan, he had to create, locally on the ground, a technocratic process of planning that incorporated both local economic and political interests across the regions.

4. The technocratic challenges

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 were keen to refashion their economy, but of course, that 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 Tse-Tse 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 (particularly for critical exports of cocoa and ground nuts). 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 ten-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.¹² Most significantly, as 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. (This huge data gathering task involved aggregate accounts for the whole economy on production, income, and expenditure by category.) This 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.¹³ There had also been a population census of 1952/3, and a wide data gathering exercise in 1953 for a development program produced by a mission of the IBRD/World Bank that had visited the country for two months in 1953 (IBRD 1955).¹⁴ More recent information was available in the *Economic Survey of 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 1958.¹⁵ 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 1950–7 and these became available to the planning team in typescript

¹²See Helleiner 1966 and Falola 1996 on these earlier planning attempts.

¹³The 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). On their work, see Morgan, 2011, and on the importance of national income accounting to development policy, see Speich 2008 and 2011.

¹⁴According to Stolper, these early planning outlines were basically public investment programs using federal surpluses, where the process involved, according to 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).

¹⁵Thompson 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.

at a certain point.¹⁶ 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 or growth domestic product), 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 (Stolper 1963, 169, 172). But 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. More seriously, many data series considered crucial for planning were missing, as was standard for developing countries in this period.¹⁷ And this was a decentralized country: apart from the Federal Government's economics and statistics teams, each of the autonomous regions had its own bureaucracy, which acted as a separate body of hunters and gatherers of economic data and formed separate centers of calculation. These three regions had different colonial legacies, different political power bases, and different degrees of economic development. According to Stolper's judgement, 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 mostly 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 being inaccurate by as much as 15% above or below the true levels, and some as being an unfortunate 50% above or below the true level!¹⁸

So, 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). 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 Stolper 1962 and the discussions that follow).¹⁹ 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 he published two other papers on his experiences.²⁰ Finally, his

¹⁶Jackson and Okigbo's data became available to Stolper, though exactly when is not clear. They were promised within two weeks in August 1960 (p. 49 of the *Diary* 2003), but still not delivered to him in March 1961 (*Diary* 2003, 70), and only finally published by the Nigerian Government in December 1961 under Okigbo's sole name.

¹⁷Such data problems were not easy to fill at the time, and many remain problematic still. See, for just a couple of examples: Serra and Jerven 2021 on the early Nigerian census, and Samuel 2021 on a recent data hole in the international macro accounts of Mauritania.

¹⁸"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).

¹⁹This discussion was by local economists 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 Aboya, who replaced him as chief of the planning unit, see *Diary* (2003), 273.

²⁰There 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 1963a 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 Stolper 1963b and 1963c).

Planning without Facts (1966)—a stark title—revealed his Nigerian experience for a professional audience. At every level, these resources reveal that Stolper's view of planning was a pragmatic one: his calculations were based on poor quality numbers and had to take account of missing ones. And they also reveal the extent to which he worked by “feeling his way forward.” 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.²¹ He gradually proceeded to gather, with many difficulties, the information he needed, and to develop his planning process.

5. Planning Nigeria's development through Stolper's eyes: The technocratic practice

We can see all these planning questions and planning process through Stolper's eyes, in the diary he wrote every few days and sent home to his wife; and his archive of personal papers holds many other items from his two years as a Nigerian civil servant.

Maybe Stolper was surprised by how little was already known in the form of economic data about the Nigerian economy, and maybe not. He soon set about filling in his own large information gap. He took every opportunity he could to travel through the regions 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 on his travels around the regions: 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 had found out the reasons. He drew also on his personal experience in the Nigerian economy when attempting to get curtains made for his apartment, trying to get travel arrangements or rest-house reservations made, and—most memorably—attempting to organize 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).²²

From his diary, we also learn that 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 bureaus 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 analyzing the data and so forth. He had to cajole and sometimes threaten to get his data. For example, his attempts 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 such data were needed in such haste and such a form. These, in turn, were 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 negotiate with a similarly junior-level staffer for permission to borrow those files for the planning unit to work on! (*Diary 2003*, 67, 72–4).

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

²²The 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, p 73–4.

Planning was Stolper's responsibility as head of the Planning Unit, but he did not start from a preformed plan. He believed that planning ought to increase individual wellbeing, but he had no pre-specified set of targets, let alone a blueprint based on some standard recipe or development theory that had to be followed rigidly (see his 1962). Nor, for him, was planning simply a schedule of capital projects funded by international aid or 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 were within the overall capacity of the economy.

His basic approach was collaborative rather than dictatorial, and so he started with the wider Nigerian economic polity, seeking out their preferred elements of the plan. In this context, Stolper expressed admiration for Tinbergen's decentralized view of planning, shaped by the latter's 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.²³ Stolper therefore asked the Nigerian democratic representatives, both federal and regional, what economic activities they wanted to develop and invest in. He consulted grassroots, 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.

But he also checked up on their claims, asking, for example: Why would someone want to build a beer-bottle factory in a sparsely populated area of the Northern territory which was predominantly Muslim? Or, can you build a profit-making slaughterhouse in this area which is away from the main population centers? One of the research trips (recorded in his diary), to Lake Chad enabled him to learn firsthand about the problems of the fishing industry and local agriculture, and showed this twofold aspect of gathering local facts and pinpointing local potential activities for development at the same time. He reported the lesson in his *Scientific American* article: "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 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).

The first important technocratic process involved analyzing these proposed projects sent in by the regions. After collecting all the information he could find about a particular project suggested by his consultations with private or public sector economic actors, 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 (Diary 2003, 242, 274).²⁴ These kinds of technical calculation were 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 which part of the economy and when. Thus, 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. This calculation regime enabled him to assess the coherence of each of the proposed suggested 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, which provided answers to a multitude of

²³See Tinbergen 1954 on policy making interactions between groups. 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, Chakravarty and Lewis: an interesting and eclectic collection of "great names".) Dekker 2021 discusses Tinbergen's philosophy of planning.

²⁴See also Stolper 1963b for a longer discussion of the pay-off calculations. For how trust was developed in cost-benefit analysis, see Porter 1995.

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 would profits from it depend upon the prices that might be paid?

The second important technocratic step where planning required his economic expertise was in putting all these individual elements together into an overall plan, which involved a broad examination of the existing economy's overall constraints. The coherence of the overall plan depended 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 a measuring framework which depended on a structural understanding of the aggregate whole: "It is easy enough to produce optimistic projections and make things come out right," he argued, "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). Using this aggregative framework denied that one could simply plan development as a series of individual projects ("project planning"), and also denied that it was a simple question of government expenditure planning. Rather it entailed an assessment—in terms of Nigeria's resources and potentials of the people, places, and available funds—that entailed sophisticated and complicated calculation using the conceptual accounting framework that came along with macroeconomic theory and its measurement system, namely, National Income Accounting.²⁵ Stolper thought this a matter requiring not only his greater understanding of theory and expertise (compared to others in the planning team) but 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" (Diary 2003, 141–2).

Imagination was needed not just because of missing information but because of the uncertainty of plans. But imagination was constrained by the necessity that the elements had to fit in with the sophisticated aggregate accounting framework that economists used to understand how the parts of an economy fitted into and worked together in making the whole economy function. What did this accounting framework mean in practice? In creating the aggregate plan, Stolper insisted on examining the consistency of the plan in *four* different respects: (1) the consistency of all these activities with each other; (2) their consistency with the overall resources and capacities of economy; (3) their consistency in both physical and monetary terms, and (4) their consistency with the likely changes in these capacities over the forthcoming period. It was not sufficient that the bits of the plan fitted together, and that the plan fitted into the macro-constraints of the national income accounts. Attention also needed to be paid to the ratios of capital to recurrent spending and recurrent physical capacities in these aggregates and over the time length of the plan. It was no good, Stolper argued as an example, to undertake lots of capital spending on schools, or even to be given funds to build 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.²⁶ This was a problem of real resources in the economy, not to be solved by simply printing more money—which does not create doctors or teachers, or physical capital!²⁷

²⁵This system involved aggregating all the data for the economy according to three dimensions: all the expenditures, all the incomes and all the outputs. The accountancy rules required everything to be counted and no "double counting," and the bottom lines needed to balance (just as firm accounts needed to balance). Thus, each time a single number changed in the plan, all the columns had to be recalculated to recreate the balances in the system.

²⁶Draft of the *Scientific American*, article, Stolper Papers, box 4, file "Scientific American," p 20.

²⁷For 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.

This sounds a simple point, but none of these activities could be considered in isolation, and the necessary extent of the consistency checks was not immediately obvious to others in the planning process.

His overall analysis, based on fitting the elements together and making sure consistency and balance would be attained, suggested that “Nigeria’s five-year plan” should avoid ambitious capital projects, should go slow on immediate social overhead investment, and should aim instead for immediately productive investment—for example in energy or agricultural productivity. This investment could then generate regular income to fund other recurrent expenditures, for example, the future funding of schools and hospitals (*Diary 2003*, 81). This was not so much a surprising or ambitious dream for developing a new nation, but a down-to-earth plan based the extremely detailed calculations of the technocratic procedures.

And, as if all this valuing of elements, calculating of the whole, and consistency creation was not enough to keep him busy all hours of the day and much of the night, Stolper was always on the lookout for the dangers that came from being a “new state” with new rulers, and from the intersection of political and personal gains.²⁸ Such dangers were multiple. Stolper was too late on the scene to influence 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 for him a continuing and worrying item in the planning process. He thought a more serious danger were those projects which he believed had no obvious economic benefit but were just very expensive symbols of statehood: for example, a new national (or possibly shared West African) commercial airline service (*Diary 2003*, 75, 147, 153).²⁹ This was a project of which he was extremely wary, believing that jets for commercial use would engender the desire for an air force, an even more expensive luxury.

Even as he sought to avoid the dangers of *overspending* Stolper was equally anxious to avoid a plan that would involve great *underspending*. He expected 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 their viability before he stitched them into the plan), or simply not ready for their planned slot in the timetable.³⁰ 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.

6. The political economy in planning circles

As the date of delivery for the plan became more urgent, Stolper’s diary entries show the intensity of his work and emotional involvement, as he became ever more obsessed with his planning mission. 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, which reveals the political economy of the whole planning project and how his technologies of valuing and splicing elements together relied on creating relations of trust in a decentralized process.

²⁸In 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). On planners navigating the political scene, see also Zoé Evrard’s contribution on Belgian planning in this issue (Evrard 2025).

²⁹In these pages of Stolper’s diary, he also relates how aircraft salesmen regarded the planning office as one of the groups that had to be persuaded to “buy” their aircraft.

³⁰This is the opposite of the experience found in some centrally planned economies where “mobilization” was so successful that the economy overreached its initial planning targets. I thank Peter Howlett for pointing out this difference in plan performance.

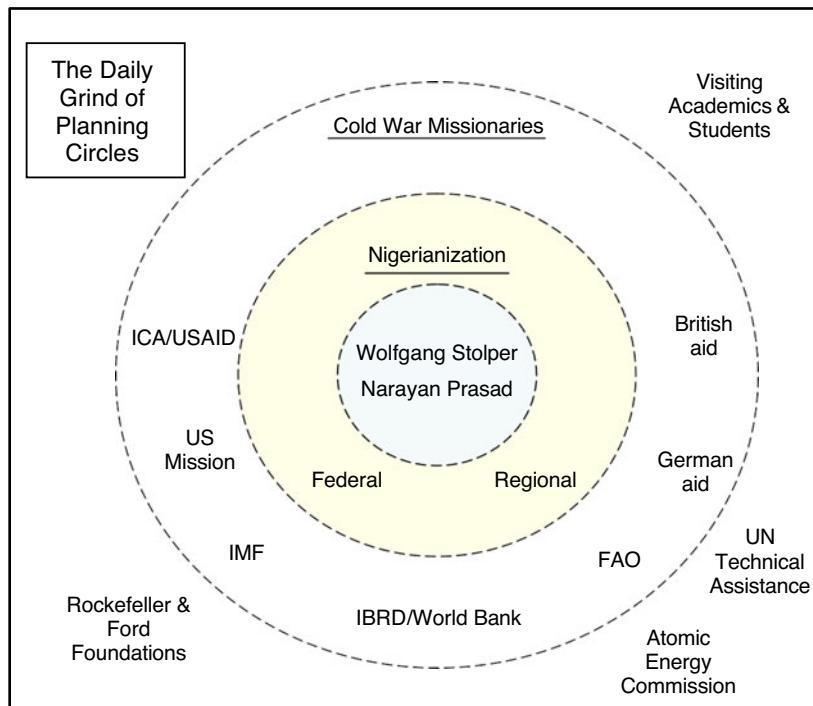


Figure 1. Stolper's planning circles.

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 did 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 center 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 without regard to the world outside. 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 center not just of one circle of calculation, but of many concentric rings within which political power and economic calculation could not be easily separated (see Figure 1).

This arrangement stands in some contrast to Latour's concept of “Centers of Calculation” in sciences (including social sciences and statistics), where their role, and their information domains, are pictured as working according to a centralizing tendency (1987, 232–57). While Stolper was indeed at the center, the circles that surrounded him reveal a decentralized technology of planning that 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. 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.

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 because they had such different recipes for economic development, as we will see later.

In addition to this immediate circle, Stolper’s decentralized planning ideals meant that his group worked with federal civil servants across different ministries, the federal politicians in those ministries, and 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 data about the existing capacities of the economy and its possibilities for development or growth. But he also had to get information from them about the projects that each of the different ministries and different regions wanted to undertake within the five-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 with three different ministers (Alhaji Shagari, Jaja Wachuku and Waziji Ibrahim) during his two-year stint, as people moved around 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.³¹

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 and thus get data, to elicit their preferences for projects, and to gain their agreement with his technocratic assessment of those projects. That is, he had to bring them into his whole way of thinking about planning and the plan’s content. The technocratic process depended upon, and was itself, a social process:

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 accomplishment[s] 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.³²

³¹The political situation was also affected by events elsewhere in West Africa (for example in its near neighbors, Ghana and Chad) as well as the pan-Africanist movement.

³²Draft paper for *Scientific American*, p. 22. Box 4, File “Scientific American”, Stolper’s Papers.

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 groups³³; 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 in this earlier period). These missions to Nigeria were, as mentioned earlier, 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 technical assistance. All these missions had a strong purpose, but they differed in those purposes. Some remained mysterious: for example, the International Atomic Agency Commission ostensibly arrived on a mission to help the Northern region with its development plans, but just what did it want? Was it looking for uranium perhaps? Less onerous, but still significant, were the visits of students and professors. These visits were not always welcome, though Jan Tinbergen’s students on study tours of Africa were amongst those that were. Each visiting 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 eight a.m. with meetings at ministries or with a 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 one p.m., 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 his piano or records before meetings began again at five or six p.m., often interrupted by another working-cum-social event at seven or eight, often with a visiting mission member, followed by another at dinner nominally at nine p.m. (but which sometimes did not begin until ten), and home at one or two in the morning. Most of his social time was also spent with others in these planning circles, so even the beach barbecues or the nightclub visits (where he felt obliged to participate in the local “high life” dance) 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 on the weekend.³⁴

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

³³On the role of experts from FAO and other agencies in the making of Colombia’s ten-year plan, see Andrés Guiot-Isaac’s contribution to this issue (Guiot-Isaac 2025).

³⁴On interveners switching between formal and informal modes of engagement, see also Niki Rhyner’s article on anthropological knowledge-workers in the context of French *Ecomusées* in this issue.

respective ranges of responsibility, and scientific battles over economic policy.³⁵ And he was most fiercely opposed to Prasad's version of planning.

In Stolper's understanding, Prasad saw planning as a series of investment projects and encouraged politicians to dream about big projects, promising them that money would 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 such 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 and so ignored all the consistency issues that obsessed Stolper in his calculations:

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 difference 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. (*Diary 2003*, 139)

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!

For Stolper, an economic plan needed to provide a reliable form of economic knowledge, and consistency was the hallmark that attested to its credibility. It is this consistency which Stolper sought to preserve in each new circulation via his aggregate technocratic approach, and so ensure 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 one of his figures made the whole plan inconsistent. He wrote in his diary: "The whole point of a consistency test is to see whether consistent assumptions yield consistent results—which they did not!" (*Diary 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 that had travelled together around the planning circles in the making of the plan.³⁶ Without consistency, as Stolper saw it, the plan would not mobilize, and his mission would fail.

How did this political altercation come about? In the final stages of making the plan, after much political activity and successive recalculations of the plan, and its extension from a five- into a six-year plan (to avoid political difficulties over where to cut it) (*Diary 2003*, 226–7), Stolper's plan was accepted by the Council of Ministers and passed in the Federal Parliament on April 4th 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

³⁵One 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 opposed 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 way to learn how to avoid them in future! (*Diary 2003*, 93, 139).

³⁶My argument here 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 similarly 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.

could be published and sent off to the consortium of aid agencies,³⁷ Prasad managed to alter a crucial assumption and figure in one of the macro accounts while Stolper was away. These finally revised figures 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 wellbeing). To find a way out of this bind, Prasad arbitrarily assumed a larger underspend. From Stolper's perspective, who had already factored in a certain amount of underspend in the plan, not only would that larger underspend have been unacceptable to the donor community, but the assumption itself created inconsistencies in the plan. This, in turn, meant that it could not be sent to the donor community, nor could it be used for action domestically (*Diary 2003*, 290). 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 to 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 (*ibid.*, 289–297). Stolper won the political battle, but it was a near thing.

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.³⁸ In the first year, aid donations did not reach their intended level, there were huge price falls in Nigeria's main agricultural exports, and (ironically following his fight with Prasad), there was a larger than expected underspend. But the real problems came from the already emergent inter-regional rivalry that finally erupted into civil war in 1967, in the middle of the plan's period. Stolper always remained optimistic about Nigeria's economy and its future, but because of the political circumstances of the plan's collapse, his missionary zeal—his obsessive technocratic zeal—in planning a viable economic direction for the country's economy, now seem tinged with pathos.

7. Mutable mobiles and the importance of the local

The details of this case resonate with several themes in the social studies of quantification over the last few decades, but offer a somewhat different message. We have a history here about mutable mobiles, one 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 stabilization of scientific knowledge into various kinds of "marks" that circulate as "immutable mobiles" (Latour 1986, 7). Here, by contrast, the technocratic practices depend not on the immutability of economic numbers, but rather on their *mutability*—a mutability that stemmed from several sources.

First, though Stolper's economic plan was certainly a mobile document that circulated economic science knowledge around the political planning circles, the plan's circulation depended on the flexible nature of many economic numbers: that is, its mobility depended on their mutability, not on their immutability. The mutability of these marks in part derived from the iterations of the planning system: between the early elements supplied by the regions, the final elements of the plan, and the ongoing process of gaining more finely-graded evidence. The technocratic elements come in two ways, in valuing the individual projects for action, and in the aggregative-level consistency checking that required repeated calculations of the plan.

³⁷This consortium resulted from the 1961 "reverse" 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.

³⁸Execution 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, Stolper believed that the decentralized economy must take responsibility. "Planning, coordination, and general direction can come from the center; execution cannot" (Stolper 1966, 13).

The second point to pick up is that this mutability characteristic is inevitable in the economic context of planning, as we know from Martha Lampland's 2010 account of planning numbers: "false numbers" are inherent in the "formalizing practices" of making plans.³⁹ Stolper needed numbers to make the plan, but by definition, planning numbers about projects are not entirely known, and of course there is ignorance about their future in a changing economic world (as reflected in the title of Stolper's 1966 book *Planning without Facts*). You have to start somewhere with your best guess. Over time as the plans get filled in with more information, those numbers iterate into something firmer, but they are still numbers about the future, and subject to the changeability of the economy under scrutiny. This does not mean those initial false numbers remain intact and stabilize, but rather they become substituted up to the point of use.⁴⁰

The third point is that this mutability in circulation was essential to the gathering of allies that would mobilize their political power into the economic planning process. Here we come to Ted Porter's 1995 "trust in numbers" argument, namely that we trust numbers because they are collected by agencies we trust and according to "standardized quantitative rules" that we also learn to trust.⁴¹ Stolper gathered his planning numbers from many sources, not just a multiplicity of bureaucracies but also other economic actors and agencies. They were not necessarily collected according to standard quantitative rules by a trusted bureaucracy as in Porter's account, but they were worked upon according to trusted principles provided from economics and accounting, both in the valuing of individual items, and the overall analytical framework. So, the tools were trusted even when the data were soggy because those data were held together by the consistency checks. These were the basic regimes of economic accounting (see footnote 25 above) plus Stolper's consistency regimes of planning: within the framework, across the framework, between real and financial resources, and over time. These were the basis of trust across the participants involved, even though individual elements numbers, were, as we have observed, highly mutable.

Perhaps more important for the development of trust was the ongoing circulation of consultation amongst the set of political and economic actors in the economy. Everyone, particularly the political actors, had to be kept in the loop. Stolper's approach was another critical ingredient, for the decentralized kind of planning that he favored depended not just on local knowledge but on local preferences, so that the mutability of numbers was directly built in to the mobilization process. Alliances were heavily dependent upon the trust built up between Stolper's center of calculation (and his method of planning) and those in the various planning circles who gathered the numbers and proposed 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 technocratic 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 presents 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

³⁹For a parallel example of this formalizing practice in economic planning, using just this terminology, see Samuel 2021.

⁴⁰I thank Patrick Wallis for a discussion on this point.

⁴¹See Serra 2018 for a good example of how this trust is created in the context of taking a population census in Ghana in 1960.

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.⁴²

Fourthly, a feature of this kind of case for planning interventions is that context fixes much of the content and so content depends heavily on the context. Consequently, changeability in context requires mutability in content. There are other, simpler kinds of planned interventions using economics, where context may not matter so much to the content of the intervention, and where it is therefore easy “to apply” economic principles in making the policy and thereby intervene. For example, a plan to reduce smoking by fixing the right level of taxes to change behavior and so reduce health budgets does require some tight calculations on relevant evidence, but it is a relatively self-contained intervention and easy to adjust to circumstances. Planning the budget and investments for a whole economy over a five-year period is the opposite level of complexity, even though there was a technically trusted means of dealing with that complexity in a conceptually-based measurement system with its consistency requirements.

It is perhaps no wonder that other nation states preferred in their plans to go after a set of individual project investments, as in Prasad’s recipe (new roads, new mines, etc.), for their development path. According to Stolper’s recipe, by contrast, planning meant to assembling a mountain of information, and outlining and filling in a substantial jigsaw, pulling all the ambitions together into a time frame, and making sure they were affordable. And this meant you had to really know about the economy you were planning. No two-day visiting missions would do; the matter required many months investigating local knowledge. As Stolper claimed, “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). For Stolper, the contents of economic planning must be local, not handed down according to a standard recipe, but these plans must be formulated by following a standard technocratic practice embedded within a social process. Sadly, all his efforts to ensure Nigeria’s future development were rendered asunder by seismic events in Nigeria’s political history and the civil war that broke out very soon after his economic Plan was put into action.

Acknowledgements. The original research for this paper 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 research began at Duke University in 2007, with a second period of research in 2023 for this special issue. Thanks go particularly to the Economics Department who supported my visits: to the History of Political Economy (HOPE) group: Craufurd Goodwin, Kevin Hoover, Neil De Marchi, Roy Weintraub (in 2007) and additionally Bruce Caldwell, Steve Medema and Jason Brent (in 2023); and in London to Tiago Mata and to Aashish Velkar for early discussions about this paper and research assistance. Especial thanks go to the Duke archivists—particularly Janie Morris and Eleanor Mills (in the early period), and the Curator of collections Andrew Armacost (in 2023) at the Duke Economists’ Papers Project—for their invaluable help in accessing Stolper’s papers. Thanks go also to those who commented on the paper: at the *ScienceFutures* conference (ETH Zurich, 6-9th February, 2008), particularly Chris Ritter and Daniel Speich; and to my colleagues in the LSE FACTS group seminar on 5th March 2008 and to various other seminar outings since. Thanks to Matthew Stolper who added color to my understanding of his Father, and gave permission for my use of his Father’s unpublished diary quotes. Thanks finally to Verena Halsmayer and Eric Hounshell for the impetus to rethink the paper and to the two anonymous referees whose comments were extremely pertinent; I am sorry I could not rise to all the challenges they raised to be more of an Africanist. The more extended earlier working paper is online at the project website: <https://www.lse.ac.uk/Economic-History/Research3/How-Well-do-Facts-Travel/Working-Papers> (paper 34).

Competing interests. The author declares none.

⁴²Draft of the *Scientific American* article, Stolper Papers, box 4, file “Scientific American,” p 20.

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Cite this article: Morgan, Mary S. 2025. "'On a mission': planning an economy with mutable mobiles," *Science in Context*. doi:10.1017/S0269889725100884