

DISCUSSION PAPER

THE AUTOMATED BAKERY: A Study of
Decision Taking Goals, Processes
And Problems in Tanzania

by

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This study seeks to examine a middle sized decision from initial impetus through implementation. Its central topic is not the automated bakery as such but the goals, processes and problems of decision taking in Tanzania as illustrated by the bakery case. In particular the effectiveness (or otherwise) of the more technical aspects of the planning process in transforming socio-political decisions into projects and operations achieving (or otherwise) the initial goals is subjected to scrutiny and ways of improving its performance suggested.

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This is one in a series of working papers, intended to stimulate discussion on the topics covered. If you would like to comment on this paper, please write to the author, c/o IDS.

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THE AUTOMATED BAKERY: A Study of Decision Taking Goals,
Processes And Problems In Tanzania*

On a cloth untrue
With a twisted cue
And elliptical billiard balls ...

- Gilbert and Sullivan

History at all times draws
The strangest consequence
From remotest cause.

- T.S. Eliot

I.

Decision Taking: Case Study and Setting

This paper is not primarily about baking technology options nor choices among them. It is a case study of the decision taking process in Tanzania based on a single middle sized project - the Dar es Salaam automated bakery.

In fact the study does not pay equal attention to all parts of the planning and decision taking process. The overtly political stages: the mass demand for ending what was perceived as exploitation of consumers by bakers, the decision by the then Minister of Agriculture (a Dar es Salaam Member of the National Assembly) that he must give priority attention to meeting this demand and the process by which other Dar es Salaam TANU leaders and Cabinet colleagues were convinced of the need to act are not examined in detail. Equally the political economic and socio political framework (of ideology or politics in command so far as basic decisions and lines of action are concerned) of Tanzania over 1968-72 are taken as given and articulated as they relate to the bakery and to the technical planning process. They are not analyzed in terms of their own ideological content nor are the causes of their evolution or the institutional and class participation in their formulation examined.

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The technical part of the decision taking process - on which this study centers - was within these parameters.¹ It did involve genuinely technical and analytical exercises which required specialists. It resulted in proposals for articulation and implementation of the overtly political decisions which went back to involved Ministers and - at least for information - to the Dar es Salaam TANU leaders and to the constituents who had first raised the issue.

The primary focus of this paper is on how the technical - and to a lesser degree the overtly political - aspect of the decision taking process operated and how well - in retrospect - it fulfilled the political goals informing the parameters within which it operated. The main purpose is to consider what light can be thrown on the limitations and strengths of the process and on how the former could be reduced and the latter preserved. Refutation - or at least placing in context - of selective criticism of the Automatic Bakery itself is very much a secondary focus in this study although it was nearer the center of an earlier version.

The question of participation does not fit very neatly within the study because of the portion of the decision taking process analyzed in detail.

1. the initial demand to act on bread was an urban household mass demand;
2. therefore the decision to act was the result of mass participation;
3. equally the parameters within which the public sector personnel (planning, management and engineering technicians) worked had been framed by a mass party and to a very significant degree in response to worker and peasant demands (which from time to time led to their modification or evolution as in the 1967 Arusha Declaration and 1971 Mwongozo);
4. the proposals of the technical personnel were subject to Ministerial approval and - had there been serious political reservations or popular criticism - to review by the Central or National Executive Committees of the

1. The use of the words "technical part" does not imply a belief that technical and political can be rigidly separated or that proposals on - e.g. - machinery do not have political consequences. Indeed the stress is on the interaction of technical issues and choices and political parameters. However, it is equally necessary to avoid seeing the whole process as 100% political with no technical content and officials as being political decision takers basically indistinguishable from Ministers or Party Leaders.

Party (bodies politically senior to the Cabinet, albeit not as of 1968-72 involving themselves in detailed policy or decision supervision unless they had cause to believe the decisions thwarted rather than implemented Party policy);

5. the decisions - after Cabinet and before National Assembly approval - were widely publicized and could have been challenged (as the abuses they were meant to correct had been);
6. however, there was no detailed discussion with Dar es Salaam TANU officials or constituents either as to how they thought the goal of pure bread of correct weight might be achieved nor of what they thought about the articulated proposals as they emerged from the technical personnel's hands;
7. Further, while a wide range of public sector officials and institutions were involved in the articulation of proposals to implement the decisions these certainly did not include 'men in the street' or 'shop floor workers'.

The first five points demonstrate that to view the Automatic Bakery decision process as a whole as non-participatory or the product of a closed bureaucratic elite of planning technicians is quite inaccurate. Whatever else may be said of them, Tanzanian public sector officials operate within guidelines set for them by the political process and have quite limited degrees of freedom so far as these are concerned; a reality of which they are aware (indeed often aware to the point of exaggeration leading to failure to take initiatives open to them and, indeed, intended by the political decision takers).

However, the sixth point demonstrates a not uncommon weakness in participation in Tanzania. Discussion of problems and goals is regularly followed by equally open detailed discussion of means only if local or communal rather than national (governmental or public enterprise) action is envisaged. The weakness is a mass as well as a leader one - there is no reason to suppose that most of those demanding action on bread had clear views on or wished to think about what to do in detail. They as well as their MP were likely to perceive that as the leaders' and the technical personnel's duty.

The same considerations apply with respect to pre-adoption discussion of the articulated proposals. In this case there is little reason to suppose such discussion would have led to a referral back to study new options. However, in other cases - e.g. the 1973-74 plans for household moves to development villages - such participation would certainly have given early warning that technical articulation was not on the road to implementing initial mass based political

decisions (Villagization had been Party Congress decision viewed with no enthusiasm by most officials) but to directing them in ways unwelcome to many workers and peasants.

The seventh point raises rather more vexed problems. There are areas in which technical expertise (whether in finance or banking, physical planning or hard technology, public sector organisation and management or agronomy) are needed. In some of these cases the man on the shop floor (at the oven door?) or in the field is an expert on some key aspects. E.g. in the development village technical articulation peasants (and their 10 House Party Cell leaders) could, had they been drawn into this phase of the planning process, have helped improve technical decisions. Whether this is true in the case of bakeries is unclear - that the question was not seriously asked is a valid criticism given the nature of Tanzania's ideological commitment to participation as set out in Mwongozo.

II

Introduction to a Debate

The Automated Bakery project in Dar es Salaam has been a focal point for debate in Tanzania. The choice is rather surprising. With a Sh 18 million odd final cost, the project is not a central one nor is it the largest National Milling Corporation new investment over 1967-75. The bakery is producing bread without major negative effects on other bakers, on NMC financial viability or on bread prices. The debate has also been somewhat peculiar in that the bakery has had no enthusiastic 'first best' defenders; a situation this analysis will not alter although it may go some way toward explaining it.

In fact the Automatic Bakery debate is in large measure about other issues of which the bakery is claimed to be an example. These range from the assertion² that a concern for investible surplus generation by parastatals demonstrates their basically capitalist nature, through the argument that 'advanced' techniques plus large plants are inherently centralist especially when small scale simple technique options exist, to micro criticisms of machinery, building and design costs. These are - or are claimed by the critics to be - major strategic and policy errors exemplified by the bakery.

2. The proposition is in general faulty. Both in the transition to socialism and socialism, investible surplus must be generated and invested. It is in communism (in the technical sense not the polemic) that surplus generation fades out as a central requirement in the marxist system.

The most comprehensive critical analysis is "The Automated Bread Factory", by Andrew C. Coulson formerly of the University of Dar es Salaam and associated with the Ministry of Agriculture's planning and analysis at the time of the bakery decisions. It presents most of the lines of criticism and a good deal of factual information. However, its factual data are highly selective especially when it comes to stating the 1968-72 institutional positions and reasoning. As a result, while stimulating, the paper builds an edifice on the implied (or asserted) foundation that NMC (particularly its General Manager) initiated the project to achieve greater NMC control over flour use and higher NMC investible surpluses and that project supporters were primarily concerned with surpluses. This is unfortunately a foundation built of sand - NMC (and particularly its General Manager) did not initiate and were highly sceptical of the project and the backers were arguing from social welfare not surplus premises.

The result of this is that Coulson's critique miscarries (for reasons surprising in an actor in the process who should have known what positions were held and why). This would not be serious if the bakery project - whatever its micro merits under the constraints and possibilities of 1968-72 - did not illustrate a number of strategic, analytical, decision taking and implementation problems. Therefore, a re-examination of the project and of the criticisms of and alternatives to it may be useful.³

III.

Genesis and Course of a Decision

The initiatives leading to the automatic bakery decision flowed from the Ministry (and in particular the Minister) of Agriculture in 1968. Derek Bryceson quite explicitly began from the fact that a number of his constituents had complained of adulteration (with sawdust, rice hulls and condemned grain) and of shortweighting of bread. His own investigation of these complaints led him to conclude that the practices were widespread and constituted a serious form of exploitation of

3. The potential value of such an analysis does not lie in assigning blame or credit let alone in defending (or retrospectively revising) past positions. Indeed only secondarily does it relate to the Automatic Bakery decision as such. Rather, the primary potential contribution lies in identifying the type of substantive and procedural problems which have confronted the decision preparing and taking process in Tanzania and the ways by which they have been resolved, partially capitulated to or evaded. That identification can perhaps be of use to those responsible for strengthening the process for future decisions both in Tanzania and in similarly situated polities.

poor workers by private sector bakeries.⁴ The minister's response to what he (and others including several who doubted the wisdom of the automatic bakery) perceived as a real and pressing problem was to propose five or six automated bakeries for Dar es Salaam and other major towns. As the national public enterprise responsible for grain milling, and in the absence of effective district and regional public enterprise alternatives,⁵ NMC was seen from the outset as the appropriate vehicle for implementing the proposals.

The General Manager of the National Milling Corporation and his senior personnel did not deny the existence of adulteration and shortweighing. They did indicate that in their opinion a large scale automatic bakery in Dar es Salaam (let alone the other towns) would be of dubious financial viability and was a low priority for NMC resource use.⁶

However, given the powers of the minister to determine the policy of the NMC, the agreed reality of the socio-economic problem (if not necessarily any detailed agreement on how large or critical it was) and NMC's preliminary view that, while it would have a negligible profit on baking, it would not suffer any significant loss of overall investible surplus flow or financial viability, NMC's management was not well placed to do more than seek to modify and reduce the project.⁷ In particular it sought the elimination or indefinite postponement of the upcountry bakeries.

The Ministry of Development Planning did not take a strong position on the project. At one stage it tentatively proposed proceeding on the bakery at Dar plus three of the upcountry units. There was no serious Devplan evaluation either of the financial or of the socio-economic aspects of the project beyond a somewhat artifactual note on the negative employment implications.

4. That the bakeries were minority community owned increased the potential explosiveness of the problem. It did not cause it - the practices would have been condemned in African private sector (or for that matter public sector) firms.

5. Cooperative, small scale bakeries were not so much rejected after serious consideration as viewed as implausible. This view, based on their insignificant place in Dar es Salaam bread supply in 1967 or the recent past, may have been inaccurate.

6. NMC's own fixed investment priorities in the medium term lay in consolidating and expanding its wheat flour mill, modernizing and expanding its maize grinding and rice milling units and developing a series of modest sized decentralized tinning plants.

7. Indeed while NMC had a duty to point out the problems and costs of the proposal and request reconsideration, it would have been highly improper for it to have refused to proceed or to have used procedural sabotage to the same end. That would have been bureaucratic capitalist elitism.

The Treasury, like NMC, was exceedingly dubious of the financial viability of the Dar project and certain of the financial unviability of the others. Its analysis suggested worse results than NMC's and its opposition - linked to NMC's - led to the cutback of the eventual decision to the Dar bakery only.

Like NMC, The Treasury faced real problems in pushing its position:

- a. It was in no position to evaluate the socio-economic (much less potential political) cost of the adulteration and shortweighting evils aimed at nor even to propose to Kilimo and Devplan how they could seek to evaluate them;
- b. on purely financial grounds the project was weak but not to a degree (either in possible low returns relative to capital or in opportunity cost of alternative projects foregone) automatically disqualifying it;
- c. therefore, Treasury almost perforce concentrated on chipping down the size of the project and seeking low opportunity cost foreign finance sources while accepting the Kilimo proposition that a priority socio-economic case existed at least for Dar es Salaam.

Kilimo's support for the project was - at least in its contacts external to the ministry - common to all involved officials until well after the decision to proceed was taken. However, the Minister's socio-economic case became less clear in official presentations⁸ and was mixed with agricultural sector mechanization, modernization and surplus generation.

No socio-economic cost or gain analysis was done (e.g. no estimate of total "bad" loaves per annum). No detailed consideration was given to devising alternative routes such as control over private bakeries by a corps of

8. In some cases what appeared was a general "food trade is too critical to be left in private hands" plea for extending the public sector. This variant lacked the very specific reasons the minister had for wishing baking to be a priority area for public sector extension.

inspectors⁹ or decentralised public sector small bakeries to reaching the goal of pure loaves of the stated weight; preliminary consideration suggested to officials that these simply would not work.

The basic problems with the decision taking in this case are clear:

- a. the non-economistic goal was not quantified;
- b. alternative means of achieving it were not canvassed;
- c. therefore, the mildly negative surplus generation projections could not be compared with projected socio-economic gains.

These are general problems. However, in rural water - health - education programmes (and in analysis preceding the articulation of the capital shift to Dodoma) some work was done toward quantifying the non-economistic outputs (gains) to see whether they seem worth their probable resource input-costs. In 1968-69 this trend had barely begun; even by 1976 it had some considerable way to go.¹⁰

9. Tanzanian officials and politicians have a general distrust of inspectorates. They appear to share a gloomy view that in most cases inspectors cannot be paid enough to avert their becoming "employees" of those they are intended to control and that skilled personnel availability constraints will mean that many are not technically competent. The result has been political emphasis on political overseeing of managers and officials, on an elite central anti-corruption unit and on voluntary mass inspection bodies (e.g. consumers for the Prices Act) and official articulation of a number of small, relatively well paid specialist corps where inspection was clearly necessary (e.g. exchange control).

10. The argument is not for mystification via social cost benefit analysis which 'economizes' all gains into pseudo-accurate money terms. For one thing that form of 'single answer' data processing is not readily comprehensible to decision takers and is objectively a means for 'clever people' in analysis to warp decisions. What is needed is a clear statement of gains: e.g. approximate hours water carrying time saved and/or number of families within 1/4 mile of pure water point, reduction in number of adulterated and of short-weighted loaves of bread, additional market for locally produceable spare parts and simple machines. These can then be compared with costs (including the opportunity costs of other projects foregone). In the case of the Dodoma studies this was attempted. The value of creating a more balanced urban pattern and thereby a cumulative process of more decentralized location of production units far greater than the initial impact on Dodoma District was articulated. Costings were prepared showing that - taking account of both time discount and inflation - by 1990 or 1995 the true capital cost of keeping the capitol in Dar es Salaam would have exceeded that of moving it to Dodoma. They also showed radically divergent costs for a phased (either 10 or 20 year) and a very hasty (under 5 year) move which presumably influenced the 1973 decision to carry out the move over 1974/5 - 1984/5.

IV

Costs, Designs, Consultants

The initial consultant's estimate of bakery cost in 1969 was Sh 11m (Sh 7 million of which was foreign exchange cost including 5.5 million for machinery). The preliminary contract price in 1971-2 came to Sh 15.9 million (of which Sh 10 million foreign exchange including Sh 7.8 million machinery). The preliminary actual figures by opening in 1975-76 came to about Sh 18 million (of which about Sh 11 million foreign exchange including Sh 7.8 million machinery).¹¹

The first problem is the cost escalation - 45% (not 200% or "threefold" as sometimes claimed by contrasting the 1969 machinery estimate with the 1971-2 preliminary contract costing for the entire bakery)¹² from consultant in 1969 to initial contract in 1971-2 and another 13% from contract to completion in 1975-6. The escalation was greatest for "local" costs (four to six to eight million shillings) but was also large for machinery including shipping because a hasty survey by Canadian based consultants with little East African experience led to very shaky guesses indeed as to the cost of replicating Canadian buildings and transporting and installing Canadian machinery in Tanzania. Escalation from consultants' estimates to actual contract of 25% was normal in Tanzania (and indeed elsewhere in East Africa) over 1968-72 but the bakery escalation of 45% was atypically high, though not uniquely so.¹³

11. All of the foreign exchange data are direct import cost only. Thus they seriously underestimate the true foreign exchange cost of construction, e.g. they treat cement as local but the fuel, power, packaging, equipment, salaries import content of local cement is of the order of two thirds of total cost.

12. Very early on, lower 'back of envelope' calculations were tossed about. One of these may have been Sh 5 million (or a third the 1971/2 figure) but Sh 10 million quickly came to be the bottom of serious guesstimate ranges.

13. Construction costs were rising 6-8% a year for reasons including import and labour costs and probably widening profit margins in a sellers' market. Therefore from 1968 to 1972 costs would have risen perhaps 25-30% on construction and 10-20% on machinery. Adding on any bidder's rational allowance for cost escalation during implementation takes this to 35-50% on construction and 20-25% on machinery or 25-35% overall on an 'average' medium sized project with a consultancy report about 1968, a firm contract about 1971/72 and scheduled commissioning about 1973/74. Greater world inflation and its importation into Tanzania would make 'normal' escalation much higher today.

The 13% escalation to completion over the period 1971-2 to 1975-6 is concentrated in the building where cost exploded upward by about two thirds. Here two problems interact. The design chosen was expensive both in choice of design itself and the materials used as well as in total fees payable. The initial design chosen by the consultants posed serious construction problems given the Tanzanian construction industry's technical capabilities and capacity constraints. This led to over a year's delay in completion and to some alterations to the design. Over 1971-2/1975-6 unit building costs rose at least 75% (probably nearer 100% for sophisticated buildings) which was far above any escalation envisaged in the 1971-2 figures. Probably about half the increase relates to general cost escalation external to the project and half to design difficulties (including cost escalations from delay).

The second problem is that of machinery cost. Both NMC and the Ministry of Commerce and Industry's Industrial Studies Centre identified potential Continental European and Japanese suppliers who appeared to be prepared to supply and install comparable plant equally rapidly for Sh four to five million or about 51% to 64% of the sole Canadian supplier's price. Even allowing for escalation in actual bids plus adding transport and installation costings, at least Sh two million could have been saved. The fact that this route might have forced unpackaging the building design - not seriously considered at the time - could further have reduced costs if NMC had used a local firm and standard Dar es Salaam factory design. In principle it would have had "learning by doing" gains - at the opportunity cost of NMC's not "learning by doing" on its flour mill - but if these had led to more automatic bakeries they would have been counterproductive as only the Dar one had any plausible case.

NMC's management pressed for securing a European supplier and had some Kilimo and some Devplan support. The Treasury vetoed the change. This, on the face of it very odd, Treasury position was based on the present discounted value (or true cost) of the alternative funds:

- a. the European sources would have required either cash or commercial loan term payment - no soft aid was available (an attempt to secure it from the Netherlands had failed);¹⁴
- b. the Japanese sources (never really seriously canvassed) might in principle have been financed under a semi-soft loan but that loan was not fully operational at the relevant time and its use always led to serious delays;

14. Negotiations with the Netherlands were abortive. Why is not clear - the inappropriateness of means proposed to social goal reason advanced would have applied even more strongly to the National Cold Chain which the Netherlands pushed very hard.

- c. Canadian aid at 0% interest and 10 years grace plus 40 years repayment was available but was tied to Canadian goods and services. Future Canadian capital aid allocations were believed (by CIDA and by Tanzania) to be becoming endangered by delay in finding projects to use existing allocations.

Treasury therefore saw the true repayment cost of the Canadian loan at not over 15% of its nominal amount versus a true cost of 100% of nominal cost for cash or commercial loan purchases from Germany. That appeared more than to offset the 40% nominal price difference. Further given the lag in Canadian aid use the opportunity cost was zero or negative.¹⁵ What the Treasury did not consider was whether the Canadian package - which included building design - would greatly raise the cost of the portion of the project financed locally. Since the saving in true cost in the Canadian aid financed package versus a commercially financed alternative of the order of Sh 5.0 million¹⁶ was equal to the 1971-2 figure for total locally financed cost (and in retrospect to 70% of the 1975-6 preliminary actual) such a calculation would not, in this case, have altered the decision to use Canadian finance unless major future spares cost differences had been identified as well as huge divergences in building costs.

The closely related third problem was the design consultant package taken in conjunction with the structure of the local architectural and design sector. The Canadian consultancy services (including design) were expensive (over Sh 1.2 million) partly because bargaining was difficult once the loan source was known and the fee included in the loan sum (and thus costing 15% of nominal amount), partly because the project was always treated as a "rush" matter albeit it did not proceed very rapidly, and partly because NMC was neither very expert in baking nor very eager to devote its own not insubstantial planning and design talents to this project.

The NMC position stemmed partly from the fact that the automatic bakery was not seen as its project but as an imposed one, from the management's need to devote major attention to the larger

15. Negative in that getting Canadian funds used in this project was perceived as potentially raising total future Canadian capital aid allocations to Tanzania available for other projects.

16. The rough calculation is that the Canadian package had a true foreign loan cost of Sh 1.5 million (15% of the nominal Sh 10 million) plus Sh 6.0 million local finance totalling Sh 7.5 million. The alternative (commercial finance) package had a loan cost of Sh 7.5 million (Sh 7.5 million nominal and true cost because of lack of soft credit) plus Sh 6.0 million local finance for a total of Sh 13.5 million.

flour milling and maize milling projects and from the management's (particularly the General Manager's) interest in trying to develop a pilot plant toward a series of multi-product, modest-sized, decentralized tinning plants bolstering the economies of fruit and vegetable growing areas.¹⁷ In these cases NMC's management did seek to unpackage, to achieve local (and suitable) building designs and to oversee in some detail. The automatic bakery's virtually turn-key approach (modified only where the design for the building led to insuperable construction problems in the course of implementation) was an exception not a rule for NMC.

The problems in the interaction of foreign and local design cost flowed from the structure of the Tanzanian sector. Architects, Quantity Surveyors and associates (some critics would say accomplices) still operated private sector, East Africa wide rate cartels. In banking the National Bank of Commerce had broken with these on its own initiative, in the case of insurance the National Insurance Corporation had (by 1972) done so almost as fully albeit after more government encouragement. But in architecture a minimum fee of 12½% of building cost remained effective even when design was de facto prepared or procured by the client and all the architect did was drawings from it. The parastatal set up to handle design tended to charge cartel rates and, more critically, was too limited in capacity and competence to break the cartel. In construction the situation was at least as bad with a de facto cartel of a few firms able to do large or complex jobs. Of these was the quasi-public sector (later fully public sector) Company - Mecco - was the slowest, most expensive and technically most erratic.

Difficulties in decision taking can be identified in the cost/design areas:

- a. while the low present cost of the Canadian funds almost certainly made Canada the true low cost supplier, the calculation process for comparing total costs (including spares and operations) among alternative suppliers was defective;
- b. the issue of ununpackaging - at least building design and erection supervision - was never seriously canvassed;

17. This interest while not opposed by Kilimo had no serious backing there and somewhat greater Devplan and Treasury interest was supportive rather than initiating. All the initiative and adaptative thinking for the Muheza plant (which came into operation in 1976) must be credited to NMC.

- c. the known weakness of the public design and construction parastatals and the resultant price and of depending on a limited, shrinking private sector did not lead to serious initiatives to enhance relevant public sector capacity.¹⁸

V.

What Alternatives - Adequate Pure Bread Supplies

Alternative discussion to be relevant must be within two constraints:

- a. ending the adulteration, short weighting evil at which the automatic bakery was aimed;
- b. avoiding state financing of major private productive sector expansion especially by firms viewed as lacking major technical competence and as engaging in dubious product and fiscal practices (i.e. most existing private bakeries).¹⁹

Thus criticism suggesting that the existing private bakers should have been allowed (or helped by public sector financial institution loans) to expand is simply irrelevant. That route would have violated both constraints.²⁰ Suggesting assisting new private bakeries (presumptively by citizens of African ancestry) might or might not have met the first constraint but would certainly have been viewed as a negative contribution to a transition to socialism.

Basically four alternatives might have been seen as consistent with the goals of the bakery project and with national strategy as perceived by the TANU Executive Committee and the President:

18. No such decision could have done much for the bakery project. The time to turn it into institutional capacity would have been too long. However, the failure through 1975-76 to act effectively, despite a series of cases illustrating the urgency, left construction in 1977 as one of the two (the other being road transport) disaster sub-sectors of the economy in terms not merely of high cost but of a private run down not matched by public sector capacity growth leading to very serious physical bottlenecks. (Design - while still weak - appeared by 1975-6 to be less critically limited than construction.)

19. As a characterization of all bakeries this was too sweeping. Both technical competence and practices varied. However, there was a distinct tendency (of consumers, political decision takers and public sector officials) to perceive them as an undifferentiated mass.

20. For more details on the private firms see S.M. Wangwe, 'Choice of Technology and Technological Change in Industry: A Case Study of Tanzanian Bakeries', ERB Seminar Paper, 30-8-77.

- a. the automatic bakery or a series of small bakeries run by NMC;
- b. a series of small bakeries run by decentralized public sector units;
- c. controls over existing bakers to enforce ingredient and weight standards;
- d. a cooperative bakery and bread marketing sector of - say - 40/50 units.

NMC's management believed that for it to operate several small units in Dar es Salaam as opposed to one large one would raise skilled personnel requirements and cost levels. It based this view on experience with small nationalized maize and rice mills and the nature of its own operating/management structure. No one challenged this NMC view which was almost certainly valid given its high level manpower constraints and the pressures already resulting from its citizenization and expansion programmes.

There was no technical impediment to small bakeries. 1967 Industrial Studies Center pre-feasibility studies (and experience elsewhere in both East and West Africa) demonstrated that. Indcentre's cost estimate of Sh 5.5 million would probably have been revised to Sh 7.0-8.0 million by pre-contract and Sh 9.0-10.5 million by completion but at each stage would have been below (5.5 vs 11.0, 7-8 vs 16, 9-10.5 vs 18) the automatic bakery's capital cost. Further, an earlier completion than 1975-76 (or even than the 1974 target) would have been possible. Equally import costs would have been lower and the buildup of spares and replacement machinery demand of a type suitable for local manufacture in the 1980s higher.²¹

The problem was not technical in the sense of a feasible production option other than an automated bakery nor - in this case - even in any particular desire for 'high technology' on the part of the NMC (which did not want the project), nor by the Treasury (which wanted a low capital cost on what it viewed as a socio-economic more than a directly productive project). Kilimo (Agriculture) may have preferred the modern technology - certainly it had a general tendency over 1968-72

21. This point is perhaps close to 20:20 vision in hindsight. Systematic argument for building up machinery and spares capacity began in the University in about 1971-2, the Treasury and Mincom in 1972, the TIB, Devplan and Kilimo in 1974. It did not exist over 1968-71. Implementation began with foundry expansion in 1972, spares production in textiles plants in 1975-76, the conversion of the TAZARA construction workshops into a machinery and spares complex in 1977.

to seek large scale, plant and machinery intensive investment to raise its Ministerial-Parastatal Development Budget vote and the share of it identifiable as 'directly productive plant and machinery'. Both its more conservative technocratic and its 'production socialist' officials pushed this line as a means to maximizing output, surplus and modernity.²²

The real difficulty was that there was no evident decentralized public sector institution to operate small bakeries. Prior experience with an ill planned and articulated mixed parastatal plus co-op marketing structure (COSATA) had left both officials and politicians wary of proposing 'green field' sectoral developments at the small scale, public sector level. The Treasury - at the relevant period engaged in a study of local government tax mechanisms and administration that shed a lurid light on their managerial weakness - never considered the idea of Dar es Salaam City Council owned bakeries as a serious one. It did back initial steps to decentralization - e.g. the District Development Fund - but in areas in which capacity to implement was fairly clear and in which initial failures would not be disastrous. It did not see Dar bakeries as meeting either test.²³ NMC had already experienced grave

22. This was even more evident in the case of the Tanga Fertilizer Company. In that case an added debacle was an apparent intra Kilimo official disorganization (or difference of opinion) leading to Kilimo micro crop and research officer data and projections for fertilizer demand being substituted for a macro projection which Kilimo's planning apparatus was unable or unwilling to provide. The costs in terms of too 'generalized' a plant and too vague a set of early year production targets were significant. Foreign exchange movements, the choice of a contractor and partner with no real prior experience in fertilizer plant construction or operation, the failure to work out bulk transport facilities (as vital and costly at the initial Dar as at the final Tanga location) in good time, the failure to develop a viable relationship between the public sector producer and public sector buyers to allow orderly year round production and shipment, the six month Israeli blockade of the phosphate supply port of Aq'aba, and a fortiori the over 50% 1967-71 fall in landed fertilizer price (during a dumping war) had even greater effects on the plant's viability until the 1973-75 fertilizer price explosion and physical shortage demonstrated that it could be viable even if far from ideal.

23. The Dar es Salaam Development Corporation postdates the key decisions on the bakery. Its real - if uneven - capacity to run a number of small commercial units combined with its problems at the time of initially taking them over suggests that the bakeries as a 'sink or swim' first project might well have meant 'sink'. In practice the (former) Dar City Council had a tendency to escalate capital requirements to increase project size and modernity - vide Kariakoo Market vs the canvassed alternative of four zonal markets and a modernization of the original Kariakoo - so that it might well have ended with one to five smaller automated bakeries not ten small mechanized ones.

problems in keeping its joint venture with the decentralized public sector - National Distributors in Dar es Salaam - reasonably efficient in meeting consumer demand and wanted no additional ventures on that basis. Finally, the national trend to centralization turned in 1970-71 (the DDF, the TANU decision calling for decentralization and the Pratt-Nsekela Report which worked out the guidelines for it) so that the bakery project was born in the last months of a centralizing not a decentralizing ethos.

Co-operative ownership of mechanical bakeries would have posed similar operational capacity problems to decentralized parastatal. It would also have posed a political or strategic difficulty. Co-ops by 1968 (and a fortiori by 1971-72) were not seen as unambiguously conducive to a transition to socialism.²⁴ In the case of urban production co-operatives (a fairly successful example of which existed in the road transport field in Dar) the problem was that if using significant capital and achieving reasonable results they became de facto private partnerships outside public and Party control and leading to greater inequality. Whatever their merits for grouping low income craftsmen to achieve decent output and return levels, these seemed irrelevant to a Sh 6-10 million project based on public finance and serving the lower income population of the capital.

Control of existing bakeries also posed problems to which no solutions were perceived at the time. To hire a corps of inspectors would have been expensive especially as unless they were well paid they would have been very tempted indeed to become corrupt. To have citizens check bread to see whether ingredients and weight were as posted (a method used with some success both in limiting and detecting abuses in later price control legislation) was only too evidently unworkable because checking prices against published lists is easier than weighing bread, much less assaying its ingredients

Control by nationalization would have posed the same management problems as a new plant (or plants). Prior experience with small grain mills (owned by basically similar businessmen) was that using ex-owners as managers without close supervision

24. The main struggle turned on the rural - not the urban - co-ops and their rural elite leadership with its national apex in the Co-operative Union of Tanzania. Over 1969-72 the Ujaama Village Programme, the removal of agricultural finance from CUT to Treasury parastatal hands and the removal of certain regional Federation leaderships marked a major cutback in Co-op power and one intended to further egalitarianism, participation and socialism. The 1974-76 moves to link villages directly to parastatals (national, district or regional) and the abolition of the old line co-operatives marked the conclusion of this political campaign.

was disastrous and that the reorganizing of non-similar, small, antiquated units was not easy; especially when an odd jumble of other activities (from supermarkets through soft drink bottling to oil expressing and boarding houses) was associated with them.²⁵

A more radical simple technology option might have been canvassed.²⁶ This would have required of the order of 40-50 2,000 loaf a day bakeries based on brick ovens with hand mixing, weighing, moulding and wrapping. The equipment and building could, at least in principle, be produced by the informal sector.

Cost - excluding the buildings - might be Sh 5,000 cash (Sh 20,000 including direct labour investment) for a co-operative bakery and perhaps Sh 6,500 cash (Sh 27,500 total) including the building. The total capital cost thus would, on the face of it, be about Sh 1.4 million (Sh 0.3 million cash) for 50 small, cooperative built and operated bakeries. Further the import content would be low and the technology, in principle at least, well within the cooperative members control both as to use and reproduction.

Why then was this alternative not seriously canvassed? Indcentre glanced at it to reject it in favour of mechanized, non-automatic bakeries.

- a. in Dar es Salaam (in 1967 or 1976) no significant amount of bread was produced in this way;
- b. the experience with trying to assist the 'informal sector' had not been a happy one (for the informal sector or the bodies seeking to interact with it);
- c. in the absence of any existing body of small hand bakeries and of any overt interest in the field a very considerable government initiative would have been needed to get rapid buildup of such baking capacity;
- d. because the mechanized bakeries (some much more mechanized than others) had virtually swept the Dar market at dates not precisely known but well before 1967 and had well developed materials procurement and delivery to retailer (including retailers on 'rural routes') systems,

25. It is not clear that Kilimo ever did suggest nationalizing existing bakeries as a serious alternative. It too had been stunned by the small grain mill mess as it became clear over 1968-9. If the suggestion was seriously canvassed, the clear NMC-Treasury opposition prevented it from becoming a live alternative.

26. This point was raised by Raphie Kaplinsky in comments on an earlier draft of this paper. His Kenya work (albeit a decade later) supplies much of the data used. The conclusions, however, are the author's.

it appeared that some form of administrative protection or market reservation would be needed to allow any new hand baking sector to survive.

In retrospect this rather cursory dismissal looks to have been formally inadequate but by no means self evidently substantively wrong:

- a. in large African urban markets - e.g. Accra, Ibadan - studies have shown mechanized (in these cases often African mechanized) bakeries gradually replacing hand bakeries;
- b. the key advantages of the mechanized bakeries were in material procurement and marketing (including getting loaves to shops) even in patterns of shops and markets at least as decentralized as Dar es Salaam's;
- c. costings on pilot cooperative projects are often far below what replication without free technical assistance actually costs (albeit a 2 to 3 fold increase in capital cost would still leave the hand bakeries radically superior on that count);
- d. in the absence of a pool of hand baking expertise and of successful producer cooperative experience generalizable to new ventures getting 40/50 - as opposed to 2 to 4 - bakeries running with a minimum degree of effectiveness even over 3 to 4 years would have involved training and support of a type which Tanzania was quite incompetent to provide;
- e. the potential lower operating cost of the bakeries (somewhat in doubt if they provided employment or self employment at or about minimum wage levels (as did most successful informal sector manufacturing - processing units) would have turned on using wood or charcoal rather than oil, gas or electricity (actually some mechanized bakeries in Dar do use wood or charcoal). Whether that substitution would be sensible on ecological or medium term economic grounds is open to doubt - the ways in which rising urban demand for charcoal and wood are being met in East Africa are alarmingly destructive whatever their import substitution side;
- f. the mechanical bakeries would have been able to drive out the cooperative hand bakeries, or most of them, unless a first rate joint distribution system had been set up and the government had made very clear it was committed to seeing that their bread was handled by retailers - a conclusion only too harshly underlined by the experience of Dar Development Corporation commercial units which might have been supposed to face lesser marketing/procurement problems and to have greater ability to withstand predatory competition.

That said it remains a clear weakness in the 1968-69 process that no serious effort was made to see whether there was any interest in hand baking by informal sectoral artisans, no attempt to set up one or two test units and no attempt to interest NMC in providing procurement/marketing services and advice to the initial cooperative hand bakeries to see what could be achieved.

With the virtues of hindsight an alternative can now (1976-77) be seen:

- a. a series of quick prosecutions (using plain clothes detectives to get evidence) in 1968 and at uneven intervals thereafter to limit abuse;
- b. a pilot mechanized bakery by NMC decided on in 1968 for 1970 completion;
- c. a training programme at that bakery over 1970-74;
- d. identify and support a group (or groups) interested in creating one to three test cooperative, small scale, hand bakeries;
- e. experiment with ways of providing procurement and marketing services to the hand bakery that allowed it to operate effectively and to survive predatory competition from the private mechanical bakeries without smothering it or de facto taking over its management;
- f. by 1970-72 deciding on the basis of experience what mix of mechanical and hand bakeries and what procurement/distribution system would meet consumer, worker and general political goals best and move to implement that mix through supporting additional unit creation;
- g. nationalization of the private bakeries in 1975.

However, the degree of clairvoyance needed to see that sequence in 1968-71 would have been worthy of Merlin, Cassandra, or a Swahili seer. Further, the opportunity cost in terms of planning and management capacity would have been high. One problem with the bakery decision taking process and project was that NMC, Kilimo (at official albeit not Ministerial levels), Devplan and Treasury all gave it very secondary and episodic attention because of the pressure of other demands. Whether they could or would have devoted the resources to make the alternative work - and at what cost to other decisions and projects - is not clear.

The issues posed in the analysis of alternatives are in a different context today - one of strategy for decentralization and, less uniformly, for the technically simple - but the actual problems remain relevant:

- a. identifying technically practicable alternative technologies and costing them (as was, indeed, at least partly done);
- b. identifying institutionally practicable agencies for implementation of each technology (attempted unsuccessfully albeit perhaps halfheartedly);
- c. having some guidelines as to what degree of risk, of project cost and of initial institutional weakness are acceptable if they contribute to decentralized public sector operations and to the use of simpler, less capital intensive technologies (not available in the bakery case and still very weak in 1976).

VI

What Alternatives - Phase Down Wheat Bread

The 'alternative' of limiting bakery capacity growth to limit the use of bread and thus to save foreign exchange has had a relatively long academic and bureaucratic 'underworld' life in Dar es Salaam. It is formally advanced by Coulson apparently as having been a live option for decision takers in 1968-71.

There are several problems with such a contention for that period:

- a. Kilimo stated that wheat production would probably reach demand by the early 1970s (as indeed it seemed to do in one year), thus the foreign exchange saving argument was the subject of debate not a baseline for further analysis;
- b. bread was (and is) consumed by a majority of the urban population and was thus perceived by the Party and the government as a good which it was obligated to keep available at a reasonable price and to hold to a reasonable quality;
- c. limiting bakery capacity would not per se have reduced use of wheat flour (and thereby saved foreign exchange) as opposed to pushing it into household or 'backyard' baking;
- d. if a real supply limit on bread and flour had been imposed the politically, socially, administratively and economically undesirable alternatives of a 'parallel' market in bread/flour with queues and favouritism or of bread/flour rationing with longer queues, a bit more corruption and - perhaps - a bit

less favouritism would have ensued;²⁷

- e. limiting bread availability would hardly have eliminated adulteration and short weighing - quite the reverse!

These very real problems are why limits on wheat and sugar use stayed in an 'underworld' rather than emerging into serious political/technical debate until 1974's very acute foreign exchange crisis. Banning sugar imports and seeking to fill the gap with jaggery was debated in 1974 and in October was applied (albeit relatively briefly and in the context of price increases and of sugar capacity due to come into production which was expected to make the gap narrow and transitory). Banning wheat imports was not viewed as plausible enough to canvass seriously even then. The situation remains embrangled by the wildly erratic views on whether Tanzania can become self sufficient in wheat - views which tend to overrespond to preliminary feasibility reports and recent crop outturns with a volatility that looked at in retrospect or from outside seems incredible. As of 1976-8 there has been a partial break-through in public sector production and identification of possible new areas for it, but reorganizing the Basuto scheme took well over half a decade so that it would be at least as rash to predict self sufficiency (taking one year with another) from 1981 onward as to claim self sufficiency was permanently unattainable.

The most cogent short term initiatives have related to potential use of non-wheat flour in bread. They have come largely from State House. Some sub-units in Kilimo are enthusiastic but there has been no real institutional drive to implement and NMC has indicated a capacity to adapt if such flour becomes available rather than demonstrating a real priority to use resources to build up purchasing and grinding capacity.²⁸ Over 1974-76 cassava was indeed used

27. When wheat flour ran short in early 1974 precisely this happened. Bakeries and stores with bread limited customers (or most customers) to one loaf. Long queues were standard. Some initial buyers resold at a profit (charging for the saving of one hour to those who bought from them) some civil service and company messengers were misused to secure bread for their 'superiors', some bread came out from 'under the counter' or went 'out the back door' at illegal prices. Abuses were surprisingly low if public comment is a good guide, as in Dar it usually is, but the shortage was not very long lived and abuse would probably have grown over time.

28. Over 1973-5 the alternative grains and cassava were in scarce supply conditioning NMC's response toward waiting. If millet, sorghum, maize and cassava are in easy supply consistently over 1978-80 NMC can more reasonably be expected to expedite studies on how flour incorporating 25% of them could be prepared and distributed instead of 100% wheat flour as a standard (not an 'inferior' alternative) product.

in blends but with maize meal (which poses less technical problems because its basic use patterns are not centered on baking) rather than wheat flour. The inherent technical problem is that wheat flour can contain carbon dioxide and thus rise in the baking process whereas other flours cannot or can do so only to a much more limited extent.

A 25% reduction in wheat use for any level of flour consumption almost certainly would allow reaching and holding domestic self-sufficiency in wheat production/use. The automatic bakery as designed is most unhelpful in that respect; its technology requires a proportion of imported hard wheat (currently not growable in Tanzania at all) and is not readily adaptable to blends with other grains (or roots).

The problems for decisions arising from the 'cut down on wheat use' debate include:

- a. achieving reasonable projections of local output of currently imported raw materials;
- b. linked with technical and financial studies of alternative (in full or part) local inputs;
- c. plus clearer identification of what goods are considered worker and peasant necessities and therefore to be kept readily available at prices reasonable in relation to worker and peasant incomes;
- d. more automatically including such macro or sectoral issues in micro-project analysis, discussion and decision taking.

VII

Problems At The Operational Stage

The automatic bakery seems to be likely to produce 40,000-60,000 loaves of bread a day in the near future i.e. to be at 12 to 18,000,000 loaves a year versus a capacity of 30,000,000. It can do so and is able to sell that output. If demand rises 10% a year from 1976 through 1980 it should be in the 65,000-90,000 range plus whatever 'bread equivalent' output it has built up - a somewhat long but not evidently unsound runup to full capacity use.²⁹

29. Especially given rapid inflation a plant whose initial output is at least 30-35% of capacity (one full shift) and whose demand growth will result in three shift operation within six years is likely to have a lower present cost than three smaller plants built consecutively. Evidently that is a rule of thumb requiring checking against the technical and cost specificities of individual cases.

NMC bread is more costly to produce than small private bakery bread - at least in terms of Price Commission costings using historic cost in respect of the private sector's capital stock. This apparently forced a bread price .05 to .10 cents higher than would otherwise have been the case in 1975. However, any new bakeries would have had higher capital (and thus depreciation and interest) costs. The higher price may be more apparent than real.³⁰

Before the new plant came on stream the private bakeries were nearing the effective limit of their capacity. Whether they would have expanded at 1973 bread prices is unclear. The new bakery coincided with higher bread prices, raw material shortages and the stagnant demand pattern of 1974-75 leading to a significant 1976 surplus capacity in the private sector and at the Automatic Bakery.³¹

The initial goal of pure bread of proper weight seems to have dropped out of the centre of attention. The private bakeries are still producing (about half the Dar market) and are still not very closely regulated. There does not appear to be a broad body of complaints as to their products but whether this represents a real change and, if so, whether it flows from the NMC operation is unclear.

No total closing of private bakeries (as envisaged in 1968-71 at least by some automatic bakery proponents) was canvassed over 1975-76. NMC alone could barely meet the demand even at 100% of capacity operation. At full capacity it could, however, cut its price. Buildup to full capacity output has been expected to take time and face learning problems. Literally putting the employees of the private bakeries into unemployment has not been politically attractive. The Dar Development Corporation neither had the desire nor was seen as having the capacity, to run the bakeries were they nationalized.³²

30. As noted by Kaplinsky in his comment hand bakeries might have been cheaper yet. Assuming returns to labour at minimum wage levels, lower depreciation and fuel should have offset higher unit labour costs. However, beyond neighbourhood sales higher distribution costs - or inability to distribute - might if West African experience is any guide) have more than cancelled out this ex-oven cost saving.

31. See Wangwe op.cit. 1968-74 had seen a rise in demand. The 1974-76 'fall' reported by private sector bakers to Wangwe is probably largely accounted for by the Automatic Bakery's capturing 50% of a stagnant Dar market. 1976-77 seems to have been marked by a revival of growth in bread sales.

32. The collapse of DDC/DEDC operation of butcher shops in 1977 underlines the point. True it was avoidable but there is no reason to suppose the failure to overcome long identified problems in the meat trade (and the blatant attempts to cover DDC short-comings by blaming others and seeking de facto operating subsidies) would not have pertained to baking as well.

The bread price could be five to ten cents lower had an early, tentative line of NMC - Treasury discussion been worked through. The Treasury had agreed that in principle the NMC had some claim to having its micro costs from the Canadian package offset by generous onlending terms. Granted, neither NMC nor the Treasury saw the cost difference as being Sh 2 to 2.5 million at the time as opposed to a final sum over three times as large, it is probably unfortunate that the issue was not followed through by either side.

It can be argued that any NMC series of principal and interest payments which provides the Treasury with Sh 11 million on dates as soon as or earlier than its repayment obligations to Canada entails no absolute loss to the Treasury. It does entail an opportunity cost of a surplus in time and money otherwise achieved and useable for other projects. To hold down the price of a staple mass market consumer good might be seen as an acceptable case for incurring such an opportunity cost (though less cogently so for an absolute loss).

Were NMC to have been lent about Sh 4 million face value repayable at the end of 25 years with interest at 6% the Treasury would have been in funds to meet its obligations. NMC would (partly coincidentally) have had a debt obligation equal to the lowest cost foreign machinery offer but at better credit terms. The interest saving would have been say Sh 360,000 a year and that in depreciation (assuming NMC valued the machinery at Sh 4 million and did not enter other external costs such as consultancy and design) Sh 750,000³³ for the first ten years. The total saving of Sh 1.1 million would allow a ten cent a loaf price reduction on a 35,000 loaf a day volume. At higher volumes the wider spread of fixed costs would maintain viability at the lower price. If desired, of course, this solution could still be implemented albeit averting or limiting a price or, rather, price increases in 1975-76 would have been a greater good than achieving a cut in 1978.³⁴

The more general problems for decision taking arising at this stage include:

- a. how to apportion the national gain on a soft loan between the Treasury (and/or other financial intermediary) and the final user, especially if there are micro costs to the user associated with use of tied credit;

33. This assumes NMC would use a new loan to build a new bakery when the existing one wears out so depreciation is a 'counterpart' to meeting its debt obligation.

34. The Treasury would now incur a loss on this scheme because the Tanzania Shilling has been devalued against the Canadian dollar. However, in general the Treasury has accepted that it, not the user parastatal, should carry the exchange rate risk on funds on-lent from foreign sources to parastatals via the Treasury.

- b. to what extent potential investible surplus on a transaction should be allocated to holding down the price of a basic consumption or production good and to what extent to financing additional capacity of that or other products;
- c. how in the case of a project with a long gestation period the initial goals can be kept in mind (on record) and results tested against them (e.g. bread quality and weight in this case);
- d. how sub-sectoral review can be routinized to ensure that particular problems are actually overcome not simply repeated at 10-15 year intervals. (In this case the issue of decentralized public sector units remains alive as dramatically illustrated by Dar butchery reprivatisation. By the mid 1980s the choices of large vs small plant, simple vs complex technology and decentralized vs centralized parastatal operation will arise again in baking as the capacity limit of the automated bakery and the mechanized bakeries are approached. The issue is whether Tanzanian bodies will have taken steps to be better able to analyze, propose, discuss, decide and implement. The 1977 Dar butchery case does not give grounds for a very optimistic prognosis as of 1978).

VIII

'Production Socialism' and the Automated Bakery

Certain of the criticisms of the automated bakery, appear to be mutually contradictory (indeed antagonistic). This is

especially true of the 'production socialist' critique.³⁵

35. In the Tanzania context those widely designated (by themselves or others) as 'production socialists' have usually stressed:

- a. a maximization of fixed investment and particularly of fixed investment in plant and machinery (presumptively on the F'eldman closed economy growth maximization version of the F'eldman-Harodd-Domar model);
- b. a maximization of investible surplus accumulation by the public sector to finance 'a' (with quite divergent views on use of foreign finance to augment this);
- c. usually 'advanced' techniques to facilitate surplus extraction (a la Dobb and Bettelheim models or their capitalist mirror image the Galenson-Leibenstein model);
- d. rapid phasing out of the Private Productive sector (including co-operatives) in favour of communal or parastatal units).
- e. holding down both social service and personal consumption growth to allow rapid plant and machinery investment growth to achieve rapid GDP growth (a la a Mahalanobis model or indeed Soviet 1930s practice but contrary to Maoist priorities);
- f. increasing technical and managerial efficiency (to use the plant and equipment more productively) within the public sector;
- g. broadening the base and extent of worker and peasant participation in decision taking i.e. debureaucratizing, hierarchy unbuilding, small unit power increasing;
- h. tightening central planning and ideological control by a small advanced cadre to avoid decisions deviating from nationally efficient resource use and central political control to penalize any deviation from national political goals;
- i. reducing inequalities in consumption power rapidly (by cutting at the top) and participation (by enhancing at the bottom) but not diverting resources from communal to personal nor future to present use.

Most have not faced several blatant contradictions among these goals and indeed within some of them, and those who have (e.g. John Saul) have not reached very convincing syntheses. This summary - which evidently is not in a form its proponents would accept - tries to bring together points made by the more 'radical' members of the University of Dar es Salaam Faculty. They are by no means in complete agreement with each other so that any brief sketch does violence to one or more on some themes.

Its criticisms of the bakery decision include:³⁶

- a. the project was designed to generate a large surplus;
- b. it would increase NMC control over the food distribution sector;
- c. NMC's general manager was also a private sector capitalist and favoured it;
- d. the existing bakeries could have expanded;
- e. a simpler technology with a lower capital cost and more employment generation could have been used;
- f. the automatic bakery was unlikely to generate large surpluses because too high a price was paid for it as a result of the use of tied funds and inadequate use of negotiations;
- g. wheat flour consumption should have been discouraged because it would lead to higher imports.

The first criticism is neither production nor socialist oriented. Subject to appropriate constraints (in this case producing bread of adequate quality at a reasonable price) public directly productive investment should be organized to yield investible surpluses for reinvestment. In any case the initiative for the project was quite unrelated to surplus generation.

The second criticism is somewhat haffling. For a public sector parastatal to increase its weight in the staple food production/distribution sector at the expense of private firms would appear to be a desirable step so far as promoting a transition to socialism is concerned.

The third point is an expression of dislike or distrust. To the extent it was a statement about a decision, it was refighting

36. Apart from the Coulson paper these criticisms have been largely verbal or in passim asides in works not dealing with the bakery decision as such in any detail.

of the (for the critics) lost battle about initial NMC management.³⁷ If NMC would achieve large surpluses and more power and basic food production and distribution through the project, the fact that a General Manager suggested such actions can hardly be seen as disloyalty or capitalist roading. In fact, as noted earlier, the General Manager of the NMC did not initiate the project and queried it as likely to hamper NMC surplus and (other) key operations development. Once Kilimo's position and the minister's commitment to it were clear, he supported the project and sought to ensure that it did not materially damage NMC.

The fourth criticism blandly ignores that the existing bakeries were private sector. Perhaps more immediately critical, it also refused to take note of the fact that the whole issue arose because they were believed to be exploiting poor workers, in the vernacular as well as the technical meaning of the term, by adulteration and short-weighting.

Thus the simpler technology criticism while valid in the abstract requires either a demonstration of its appropriateness for NMC or identification of an alternative public sector implementer if it were to be cogent in the actual context. To have financed private sector mechanized bakeries would hardly either have dealt with the immediate problem or furthered a transition to socialism.

37. NMC management had been the subject of a long drawn out decision. The choices were:

- a. to hire each ex-owner to manage his former unit with little control and much oversight (of the wrong definition);
- b. to hire a new expatriate management with no East African experience;
- c. to hire the Kenya based Unga (ex-owners of the largest mill) as managing agents;
- d. to hire J.K. Chande (ex-part owner and General Manager of the second largest mill) to provide a management team.

The real debate was between the last two options - the first was increasingly seen as disastrous and the second as dubiously feasible or desirable. Kilimo favoured Unga (as did most outside commentators) on the grounds of 'proved capacity'. The Treasury favoured Chande on grounds of a much lower price contract, a better training record, absence of the conflict of interest which Kenyan milling units necessarily entailed and citizenship. Unga settled the decision (which was already swinging against them) by demanding almost immediate acceptance of their terms backed by a threat to withdraw staff. They were promptly told to leave at once and the contract with the Chande team signed. The NMC-Chande was a success and did lead to NMC being in a position to engage in self management at its conclusion in 1973.

The sixth criticism's first branch that the bakery was unlikely to generate a surplus was a logical one and has proven valid in the event. It was not unique to the 'production socialists'. NMC, the Tanzania Investment Bank, and Treasury thought the same. The second branch that tied aid raised costs of machinery, building and design is true in nominal price terms but untrue in real resource cost terms. These amounted to a no interest loan at no opportunity cost in terms of other projects foregone. That more attention to trying to unpackage the building design and to bargaining on other cost items would have been desirable is a valid point. How to do that in a tied, soft loan context is a problem. The Treasury and TIB have found it exceedingly hard to tackle that problem systematically or effectively not for lack of attention but for want of leverage unless the project or plant or service contract negotiating is done before the soft loan is concluded.³⁸

The final criticism is per se invalid if local production can be built up to equal demand at a reasonable real resource cost and/or a no import position can be achieved by blending wheat with other flour. If wheat imports are inevitable unless demand is deliberately curbed, the criticism implies either that wheat flour is a luxury good with a narrow market (untrue), that requiring changes in patterns of staple foodstuff consumption should be undertaken by the state for marginal foreign exchange savings (a question of the true costs of such coercion and of basic values on which TANU's leadership would probably disagree with the critics for practical and ideological reasons), and/or that the future foreign balance projections are so bad that every non-subsistence consumption good must be cut out (palpably untrue in 1968, arguable in 1974 although still a matter on which disagreement on both practical and value grounds was possible, much harder to assert in 1978).

The muddle in the criticisms reflects a basic antagonistic contradiction in the 'production socialist' position. On the one hand it pushes for more investment in plant and machinery, more and tighter control over decision taking, less tolerance

38. Building up alternative lines of soft credit in frame agreements and then shopping about for suppliers before determining which frame credit to draw upon has been used by the Treasury and financial parastatals in this regard. It is by no means a complete answer - especially since the gaps in lines of credit adequate for large projects are bigger than the gap filling capacity of untied lines of credit available. The Mtibwa and Kilombero sugar mill finance negotiations both illustrated (in slightly different ways) the real (even though not negligible) limits to negotiation when the credit source is known, the purchase limited to one country and the number of suppliers in that country very small (often one as in the bakery case and Kilombero II).

of actions based on small group or individual gain, more surplus for growth at the expense of mass social services and consumption goods. This sounds rather more like Denis Healey than Chairman Mao and also more like Joseph Stalin than President Nyerere. It is basically restrictionist and elitist. At the same time it is deeply suspicious of investible surplus producing parastatals and their managers because it perceives them as likely (or certain for some critics) to perpetuate state capitalism and to block a transition to socialism.

In principle it is committed to worker and peasant self management preferably in small units with simple technologies and wishing both mass based and decentralized decisions. This is Maoist, in some cases more Maoist than Chairman Mao, but this branch of the argument is not readily compatible with avoiding some mistaken or uncoordinated decisions nor with the earlier quest for lowering present priority to meeting immediate peasant and worker needs in favour of fixed investment.

The two halves of the case are in fundamental conflict - especially as the second even on technical grounds requires higher priority to investment (or expenditure or resource allocation, whichever term one prefers) on adult and primary education, rural health, pure water, housing and basic consumer goods as ends and means to achieving growth and less emphasis on 'plant and machinery' as ends in themselves as posited by the first half.

This bluntly put the 'production socialist' position may appear silly. Certainly there is a tendency for both capitalist and orthodox Marxist critics to dismiss it all as ill considered anarchism, naive utopianism or a romantic Fabian variant of corporatism. That is far from the case. The contradictions are in large part very real ones which confront any attempt to evolve a transition to socialism in which politics is in command, the production relations are transformed and the level of productive forces simultaneously developed and restructured. What is unhelpful is the 'production socialist' tendency to put down both the thesis and the antithesis as goals as if that somehow constituted a synthesis - a route much more in the 'functionalist',

'end of ideology' North American political 'science' tradition than in the Marxian one of dialectical struggle.³⁹

Tanzania does need more directly productive fixed investment and more public sector investible surplus. To isolate this from infrastructural fixed investment, education and public services and especially from public enterprise working capital finance (virtually never seen as investment by the Tanzanian 'production socialists') is counterproductive. For example in cashew nut growing wells, roads, houses, seedlings, agricultural input and crop finance, health facilities, adult education including agricultural education and marketing/processing/transporting institutions are all infinitely more critical than plant and machinery (tractors? mechanized implements? specialized silos?) for cashew producers (communal or individual). Cashew nuts may be an extreme case but on balance Tanzania has been too concerned with plant and machinery in isolation from other production package elements, not the reverse.

Similarly, Tanzania does need greater mass participation in decision taking and decision frame setting if it is to achieve the type of transition to socialism (and the type of socialism) TANU's leadership has sought. However, both Chinese experience and that of TANU suggest that participation goes together with a basic human need - not a maximum fixed investment and Gross Domestic Product growth oriented - strategy. Tanzania may have placed somewhat too low an emphasis on growth, which is a precondition for being able to move ahead with any strategy, but the position of the 'production socialists' (and indeed at a different level of the USSR) as the last of the 1960's self confident 'growthmen' fits oddly with their other emphasis on simple technology, small units and participation. And on participation there seems to be a clear assumption that unless workers and peasants decided they wanted the same things as the writer then there was no 'true' participation, only 'false consciousness'. Either that is a definitional tautology or it is arrogant, intellectual elitism owing more to Plato's Republic than to any of Marx's writings.

39. Some of the 'production socialist' work explicitly, and more implicitly, relates to the 1920s and 1930s Soviet debate on, and resulting policies toward, agriculture. However, it is hard to avoid the conclusion that the use of elements from diverse positions and periods results in a pastiche not a synthesis. Further, the Soviet experience suggests that viewing agriculture as a sector to be exploited for surplus to build up the state, the cities and heavy industry has quite specific costs and builds in long term contradictions inimical to at least the production relations and mobilization aspects of transition to socialism. In this context the Chinese model - very different from the Soviet especially in its higher emphasis on agriculture as a sector and peasants as immediate beneficiaries of higher productive forces - would appear both more relevant to Tanzania and more consistent with the main trends in non-bureaucratic and non-technocratic Marxian analysis. The attempt in some production socialist writing to blend Stalin and Mao on agriculture appears to misunderstand both.

The contradictions are real - as a Tanzanian minister warned building socialism is not like a social dance - but the 'production socialists' critique of the TANU strategy while often valid, insightful and telling at the micro level becomes self defeating when added together and ultimately fails to provide a coherent macro alternative.⁴⁰

The failure of the 'production socialists' to be heard consistently turns on their own objective contradictions about participation and about worker and peasant supremacy in decision taking. In 1969 several were welcomed as independent technical experts in Plan working groups. Problems arose when they claimed a (mystical?) oneness with the 'masses' allowing rejection of TANU positions which, whatever else could be said of them, had at least been discussed and sometimes proposed by rather large numbers of workers and peasants. Similarly, the greater analytical power of their critical than their positive proposal work leads to stunning anomalies. For example, in West Lake 'production socialist' analysis (partly within the Regional Planning exercise) pinpointed a number of serious defects in the conceptualization, articulation and operation of villageization even if its tone was often somewhat overemphatic and its quantitative descriptions appeared exaggerated. Equally it clearly showed the limits to what could be achieved even if villages did move to true Ujaama status. However, the counterproposals centered on small local capitalists, 'progressive farmers' and the Bukoba Cooperative Federation. Since these were historically and objectively the bodies most opposed to socialism and least controlled by peasants or workers, it is hardly surprising that the proposals were not simply rejected but put the good faith of their authors and the validity of their criticisms at issue.

40. At the international economic system level the same result emerges by different routes. The capitalist (and to a lesser degree the European socialist) systems are analyzed as inherently exploitative in relations with non-industrial countries (a valid contention). A number of individual Tanzanian external transactions are criticized (often, though not always, correctly) as having been bad deals and/or increased dependence. Alternatively all efforts to negotiate with capitalist states and all efforts to create a semi-independent Third World bargaining force or economic system are seen not simply as of limited potential but as objectively reactionary mystification. The conclusion is reached (conceivably quite correctly) that international economic reform requires a socialist world order of relatively equally strong socialist states. What TANU's leadership or government ministers or officials or managers do in the meantime can only chip at the edges of the problem at best and will probably make it worse. This may well be true in an eschatological sense but offers no answer to the question 'What is to be done?' and is counterproductive unless one assumes that the socialist order can come only from revolution in the industrial centres and that Tanzania's efforts are either premature or irrelevant both globally and for Tanzanians.

It is not surprising that at best the critics are seen by many TANU members and leaders as an ivory tower elite abstracted from real involvement with workers and peasants or as 'infantile leftists' and at worst as authoritarians whose commitment is to power and prestige not people or participation.

This is not a healthy situation - the 'production socialists' are asking several of the right questions whatever one thinks of the answers. Bundling the criticisms out with the odder action and the analysis out with the analysts' assertion of his right to decide himself what the masses 'really' think is counter-productive. It does limit inquiry and provides a defence for existing authoritarian, technocratic and secretive tendencies. It also reinforces the critics' perception of themselves as prophets and of politicians, managers and officials as a closed elite whose rejection of their proposals and claims for power to implement them represents a sub-class interest and little else.

IX.

Who Got What They Wanted?

The short answer to the question is probably nobody in Tanzania in full but quite a number of involved institutions in part. Kilimo got a large public sector baking capacity, but at a time when the adulteration/short weighting issue had either been resolved or lost to sight. NMC got a large, headache ridden project it had not wanted, but moved it into an operating and price position which at least avoided threatening the corporation's ability to supply products and to remain financially viable. The Treasury agreed to a project on ill defined socio-economic gains grounds (which then fell from sight), but did use low cost funds and stands to make a surplus for other uses on the relending transaction. The private bakers are constrained by a major public sector capability but remain in business. The bread consumers of Dar es Salaam have had an extra increase in their bread price compared to what the old bakeries needed, but have avoided the critical bread shortage that probably would have resulted had NMC not built the automatic bakery.⁴¹

41. The 1976 overcapacity resulted from the Automatic Bakery's creation. Without it the sector would have been at or near capacity. The 1974-76 economic crisis (not foreseeable in 1968 or 1972) would have delayed the capacity constraint to say 1978 but not resolved it.

On the Canadian side the consultants and machinery producers probably did get what they wanted - relatively generous contracts for goods and services. Canadian Aid, however, while it did get a loan agreement to reduce the backlog of unallocated funds then piling up, did not get rapid disbursement and did get a project subject to both Tanzanian and Canadian criticisms.⁴²

The results look more like a mildly unsatisfactory compromise than either a clever scheme to influence political decision taking, a cogent identification of and action to meet a compelling social priority, a production and investible surplus example to be copied or a major technical and financial debacle. Many decisions and projects were vastly better and a number e.g. Kariakoo Market, COSATA, the new Uvinza Salt 'Works', TANCUT (diamond cutting), the McKinsey model STC reorganization, probably all the pre 1974 cashew nut processing ventures, MECCO (construction), NEDCO (design) probably Dar Motor Transport and National Road Haulage and National Cold Chain have been very significantly worse.

Bread was kept available to Dar workers (with minor breaks relating to grain supply not baking capacity) at price levels not significantly above what any capacity expansion would have entailed. The building of the decentralized parastatals was not seriously hampered since DDC had quite enough projects as did worker cooperatives. No really serious financial or managerial burdens were placed on NMC or the Treasury (or for that matter Kilimo) prejudicing their other activities. No Tanzanian improperly amassed wealth or power (nor even unbearable headaches) and the degree of Tanzanian external dependence was in no serious way increased (nor improved).

To assert the contrary is as unrealistic as to claim more. Equally to claim that the Dar bread decision - taken by itself - could have yielded major gains on any of these fronts is not very plausible. What is realistic is to suggest that the decision preparation and decision taking process was weaker than should have been the case and that these weaknesses cumulated across a series of decisions have entailed costs of inefficiency in respect to each goal sought, whether better bread, more investible surplus or lower import reliance.

42. CIDA might be said to be especially unlucky. It did provide what Tanzania sought. And when (conceivably partly in response to the bakery problems) it took the opposite approach of repeated restudies of alternative technologies on the Dar water supply project it received much sharper Tanzanian criticism because the studying delayed the project so long that it could not be completed before Dar had hit the ceiling of existing capacity and experienced acute water shortages for two years and until costs had escalated 100% against those at the time discussions were begun more than offsetting the (not unreal) savings from redesign.

The most cogent micro case against the bakery is that Sh 8 million of domestic resources were used for it instead of for a higher priority use; e.g. small scale agricultural processing plants. This conclusion depends on the assumptions that the private bakeries could and would have continued their 1968-72 expansion, that baking was not a priority area for public ownership,⁴³ and that quality and weight control could have been enforced or were not worth the cost of reallocating scarce domestic investment to the bakery. It was de facto the case NMC and Treasury argued but which was not acceptable to the Minister for Agriculture because he rejected the last two assumptions.

X.

Reflections

The automatic bakery project is of general interest as a study in problems in the decision taking process in Tanzania with special reference to 1968-72 and to a lesser degree 1972-76. Many of the issues involved are still real. A study of what was decided, with what information and what analysis, and why can be useful in seeing how to improve future decision making. To do that the study must be accurate - e.g. to treat NMC as initiating or even wanting the bakery and to substitute surplus generation for product control as the dominant goal hopelessly muddles the exercise. Equally an exercise of this kind must be quite different

43. To argue a la Coulson that the private bakery expansion was 'at no cost to the government' is hopelessly inadequate. It is a startling contention from a 'production socialist' since, in that bold and unqualified form, it is an ideological mainstay of laissez faire capitalism. In the first place to use cost and investment as synonymous is misleading - any investment has a cost in that sense e.g. the nationalization of the main wheat, maize and rice mills 'cost' on the order of Sh 30 million but soon yielded annual post-tax surplus flows well over a quarter of that investment. In the second place random encouragement of private enterprise expansion - even if it is available and willing - is an odd way to achieve a transition to socialism. To be cogent the argument must give priority schedules for public sector takeover and argue that for some years a particular existing activity and its expansion should be left in private hands because it is already subject to public sector control (bread quality and weight was clearly not) particularly unsuited to public sector operation given existing and short term future sectoral capabilities (true for small bakeries but less so for the automated one) and/or highly peripheral (a highly debateable point for a staple foodstuff consumed by a high proportion of metropolitan workers).

from a campaign of blame casting (or avoiding) if it is to be useful.⁴⁴

The automatic bakery decision given the knowledge available and the alternatives actually open was not a very bad one, neither was it very satisfactory in terms of Tanzanian targets for quality standards in such decisions. Because it was a moderate size decision which involved more than usual documentation and controversy it is both typical of a number of decisions in terms of size and complexity and atypical in terms of ease of study.⁴⁵ Less than strategic but much more than routine decisions like that in respect of the bakery arise perhaps a score of times a year. They pose special problems because the full panoply of personnel, analysis and political decision taking attention given to strategic decisions cannot be mobilized for them while the helpful guidelines of directly relevant experience which backstop and facilitate the routine decisions are equally unavailable. Examination of the problems surrounding such decisions probably deserves more attention than it has received in Tanzania not simply because, as the President has repeatedly pointed out, 'mistakes are mistakes' but because only by examining past partial mistakes and partial successes in decision preparation and taking can only understand the underlying causes of the strengths and weaknesses of the process in order to build up a capacity for more nearly correct future decision preparation and taking. Only then will one be able to 'Choose to go forward' rather than repeating the past.

44. It should be made clear that the author does not claim he raised the issues he now poses over 1968-72. His views then were in the main not significantly divergent from the corporate position of the Treasury. Its limitations were his as well and the criticisms which can be made of it can be applied to him.

45. To date such study has been limited because while little of the data is - or is seen by the government as - confidential a great deal is in places where its retrieval is hampered by the confidentiality of associated papers and by the problems of conducting a wholesale search through Tanzania's none too well indexed or organized files. Further much that is not - or no longer - confidential is recorded only in illegible minutes or fading memories. One use of this paper is intended to be to bring as much as possible of the data into one publicly available place.

The learning contributions of the Automatic Bakery project fall into two categories - proposals and remedies often propounded which would not have led to a significantly better decision preparing and taking process and guidelines for decision process strengthening. The first are not unimportant because they are seen as negative. While their irrelevance to this case does not mean they are always useless, it does suggest their importance may be overrated and that major efforts to use them may represent a misallocation of resources. They include:

- a. Better Project Evaluation Techniques. No known technique would have helped significantly in this case. The basic P/E (price earnings ratio) work was adequate. P/E (or Discounted Cash Flow) is too economicistic (at least as PE or DCF are normally used) to have answered the genuine questions on socio-economic aims, private versus public sector and acceptable public sector institutions. A better project on capitalist micro criteria would not necessarily contribute to greater macro efficiency within a strategy of transition to socialism.
- b. Admonitions to Consider Non-Economic Factors or alternatively to Avoid Political Interference. The key factor in the project's initiation and acceptance was 'non-economic'; the problem was that it remained quantitatively vague and qualitatively uncertain. The alternative admonition is either grossly ideological (and the wrong ideology for Tanzania) or silly. It is a proper concern of a politician that unadulterated bread of the correct weight be available and, more generally, to try to take the political out of political economy is either a purely academic exercise or a defense of some special interest (usually, but not necessarily, a capitalist one). Taken literally it says 'keep politics out of political decisions' which is rather like seeking dehydrated water.
- c. Sophisticated Social Cost/Benefit Analysis. To have arrived at a guess as to the 'money cost equivalent' of loss of nutrition, illness, discontent from bad or skimpy loaves and treated that as part of the social profit of the project would not have been helpful. It would not have been 'scientific' because the 'precise' figure would have been the direct result of some technician's very imprecise value judgement and would probably have substituted not simply for a political judgement by properly constituted decision takers but also for actually trying to measure the size and severity of the socio economic problem.
- d. Productive Sector Priority. A bakery is per se a directly productive sector project. However, this one was decided upon despite a low probable rate of surplus generation because of socio-economic reasons analagous to those governing rural water decisions. Nor does a general guideline that productive sector projects as a group must generate a target rate or level of investible surplus help much in deciding whether a given case is a valid exception if strong social

and/or political reasons for treating it as such have been presented.

The positive guidelines can be grouped in eight clusters some relating to project consideration, some to financing, others to sectoral and macro judgements and a last to follow-up and evaluation. The division is not on a standard micro (economic) versus macro (political) basis - the argument from the bakery case is for integration of political economic and socio-economic considerations throughout the decision preparing and taking process.

1. Project Consideration - Internal Factors

- a. The importance of the project in terms of its product, users, linkages and other characteristics should be spelled out and related to strategic goals (e.g. bread for urban worker consumption is a basic food).
- b. All goals for the project (pure food, surplus, etc.) should be specified and prioritized.
- c. The goals should be quantified (e.g. how much adulteration and shortweighting exist) and this should be done in terms of outputs not costs (e.g. in the control by inspection option reduction of abuses must be estimated not simply cost of inspectors).
- d. Particularly in regard to 'non-economic' goals participatory structures should be used to determine how significant the goal (or the problem to be eliminated) is as perceived by workers and peasants. (e.g. Dar es Salaam's TANU cells and branches could give a better idea on the bread quality/weight issue than any technician or even political leader. Some of them raised the issue but it was never put to them for systematic discussion.)
- e. Serious efforts should be made to check cost data, build in allowances for escalation (or to achieving contract clauses blocking or limiting it if possible) and test project performance for different cost and output assumptions - i.e. use 'crude' sensitivity analysis.
- f. Possible project operators should be identified (and compared) in terms of ability to achieve project goals and the benefit (or the reverse) of the project to building up the operating institution's overall capabilities.

2. Project Consideration - Spread Effects

- a. The effect of the project on demand for scarce resources (e.g. foreign exchange for wheat) and on stimulating demand for local production (e.g. local wheat or - given a mixed flour - sorghum and millet) should be quantified.
- b. A foreign exchange projection for the project covering its construction and operation stages should be drawn up (with clear specifications as to what the alternative assumed is e.g. less bread? private bakeries?).

3. Alternative Approach Consideration

- a. The first step is to consider whether any project is needed to achieve goals (e.g. why not control private bakeries and let them expand).
- b. The second is to identify alternative technical approaches -e.g. mechanical bakeries, brick ovens, and/or alternative institutions to operate them (e.g. the then Dar Development Corporation, baker Co-operatives).
- c. The options (of no project or a sharply restructured one) can then be evaluated in terms of the goals to achieve which the project was proposed.

4. Financing and Negotiating

- a. All financing options should be evaluated in terms of true financial cost to Tanzania with long payment and low interest to Tanzania as gains and higher costs (e.g. tied aid) or delays in approval (e.g. IPRD procedures) as costs.
- b. The same costing should be done from the project operator's point of view.
- c. If there is a divergence between the lowest cost to Tanzania and to the project operator, the former should prevail. However, a tentative case then exists for the Treasury to offset the extra cost to the user, (e.g. by a soft loan or an adjustment of the principal sum).
- d. Whether the tentative case should prevail, be modified or be rejected depends on whether the operator needs the offset to have an acceptable project financial result and on who will pay the cost if there is no offset (e.g. in the case of bread the offset would benefit primarily wage earners whereas in the case of a detergent factory it would benefit primarily salary earners).

- e. Attempts should be made to secure offers from, and negotiate terms with, more than one potential supplier before tying the project to a credit source which is useable only in one country. Efforts should also be made to secure finance from sources which can be used to buy from the supplier offering the best contract.

5. Technology/Knowledge

- a. Capacity to identify hard (e.g. machinery) and soft (e.g. operating procedure and institution) technology should be built up and involved in consiseration of all significant projects (Indcentre in the bakery case was only peripherally involved and did not consider the soft technology side);
- b. The capacity should be directed to achieving unpackaging (e.g. local building design and erection, purchase of machinery from several sources with Tanzanian supervision of installation).
- c. It should also build up guidelines and access to data for evaluating prices (including probable future servicing and spares costs).
- d. This information should be used directly in negotiation by involving the technology consultancy unit (whether Indcentre, TIB, Institute of Finance Management, National Institute of Productivity or Tanzania Industrial Consultancy Organisation) in the negotiating team along with the project operator, legal, planning and general business economic personnel.

6. Constraints From Weaknesses In Related Sectors

- a. Consultancy especially in respect of 'soft' (organizational) issues and of building design.
- b. Architectural design.
- c. Construction.
- d. In each case there are weaknesses in overall Tanzanian (or even Tanzania located foreign firm) capacity and in the second and third the public sector is weak within the total of Tanzanian based capacity. The three weaknesses interact to 'produce' unsuitable structures, unnecessarily high design and erection costs, delays in construction, needlessly high imports of services and building materials, and operational/institutional patterns inappropriate to Tanzania.

7. Project/Macro Planning/Strategy Interlock

- a. The linkage of project goals to those of the annual planning exercise as a whole and to the broad strategy (for the sector and more broadly) should be made clear at the start of project consideration and checked again in final presentations for decision.
- b. The relative importance of the project (and/or an alternative form of it) to the national planning exercise and strategy should be made clear.
- c. When possible the opportunity cost of the project - usually in the simple terms of the available substitute in the same or a related sector (e.g. small scale tinning plants for the Automatic Bakery) - should be identified so decision takers have a clear idea of what is being 'sacrificed', 'traded off', left out for the project under consideration to go ahead.

8. Followup and Evaluation

- a. When the consideration of a project leads to identification of removeable constraints in related sectors (e.g. small scale parastatal managerial and operational competence, design sector private cartel and public unit weakness, construction capacity limits and doubtful competence or cost efficiency especially in the public sector) some mechanism (channel of communication) should exist to feed that information into planning for those sectors. Generally the effects will be on future projects not the one under consideration. But unless the project in hand's experience triggers action, the same constraints will presently face future projects.
- b. Equally when limitations on the decision preparation and taking process are noted that information should also be fed into an ongoing review process.⁴⁶
- c. Each project should be evaluated at commissioning and after (say) 1,3,5 and 7 years of operation against projections and goals set at the time of decision (e.g. what has happened on adulteration and short-weighting and why?).

46. To be blunt - Devplan, the Economic Advisor to the Treasury or a member of Kilimo's planning unit should have attempted a paper along the present lines in 1972. This again is hindsight - the author did think of this point while still EA/T but not in 1972. Even in 1973/74 he did not give this particular exercise high enough priority to get it done.

- d. Radical divergences in costs, outputs and goal fulfilment (whether positive or negative) should be analyzed as to cause and as to how to promote (positive) or limit (negative) them in future.
- e. These evaluations should be a formal part of the annual planning (and especially the annual parastatal planning) process. They should be available to decision takers in Party and government and should also be published in a form comprehensible to the lay reader. In particular they should be prepared in consultation with and released to Workers Councils and Party Branch committees.

Viewed more broadly the Automatic Bakery affords some insights into the problems of the Tanzanian decision making process paradigm's realization in actual operation. The paradigm can be set out as:

1. Proposals related to ways of advancing toward systemic goals which can be either large or small and can properly originate with anyone;
2. Testing of the proposals against the needs of workers and peasants through the political process in a way in which real worker and peasant statement and consciousness of their needs is maximized; leading to
3. Political decision in principle as to what is to be done and why in fairly general terms; requiring
4. Formulation both by direct worker and peasant inputs and by 'clever people' of the means - with associated costs and probable results - of carrying out the decision (not necessarily by the means initially suggested); flowing back to a
5. Final political decision to act taken by the Party (at a level in principle related to the scope, importance and urgency of the division) and articulated by the Government (and/or a governmental or paragovernmental instrumentality); leading to
6. Implementation by governmental, paragovernmental, worker and peasant bodies and individuals, ideally in a creative rather than a routinized way; followed and informed by
7. Review on the basis of worker and peasant, party and technical evaluation of the results; to guide
8. Revision and to creating new insights for subsequent decisions.

The process is both in principle and in practice intensely political - technocrats and intellectuals, as such, are very rarely in command. It is in principle, but rather unevenly in practice, highly participatory. The contradictions here are between the process and the goals it is intended to serve (e.g. a regional decision to opt for a capitalist road must be overridden at the centre no matter how participatory it was on its face) and between acting on worker and peasant perceptions and the raising of worker and peasant levels of consciousness (the reason behind President Nyerere's title of Mwalimu but equally behind his belief that compulsion is at times integral to defending or advancing participation).

There are at least five tendencies for the process to go astray:

- a. technocratic judgements not based on the same value foundations as those of the decision takers' can drastically alter the real content of a decision in 'formulation' e.g. the astounding transformation the World Bank guided 1964 Farm Settlement Programme represents in respect to President Nyerere's 1962 speech from which, in principle, it sprang;
- b. state bureaucratic (government including the national and subordinate assemblies, Councils, Committees and parastatals) implementation is frequently both hierarchical and formalistic and at times thus not only creates 'abuses' but radically alters the meaning of what is done through alteration of style e.g. the worst of the 1974 villageization operations;
- c. Party bureaucratic which appears at some levels and in some cases either to substitute itself for or to manipulate worker and peasant perceptions e.g. several of the 1973-74 decisions on the pace of villageization and on revival of agricultural by-laws which were initially opposed by the centre and (for different reasons) local government bureaucrats and which while apparently produced by Party meetings do not in retrospect appear to have embodied actual peasant consciousness so much as Party bureaucracy irritation at the slowness of change;
- d. political decision taker lack of adequate perception of the limits of the possible imposed either by levels and form of productive forces (e.g. the repetitive abortive attempts to create rural cooperative shops by first closing private ones) or by the level and nature of consciousness (e.g. the recurrent dress code fiascos).

This is not to argue the paradigm is unreal nor that most decisions are bad. That would be manifestly untrue. The archtypal pattern cases of the full use of the process are probably the capital shift to Dodoma and the total recasting of the Marriage Act. The Automatic Bakery provides a quite different type of test because it was a decision of a class neither large enough nor infrequent enough to justify the full panoply of a special national consultative process.

1. Proposals came from workers 'end adulterated and short-weighted bread'. They came into the Party or governmental system (Ndugu Bryceson either in his Party or MP role not as Minister); and did lead to
2. Testing with some workers and with technical personnel to demonstrate that there was a problem albeit the testing via the Party political process seems to have been rather informal and random; but a
3. political decision in principle was taken which had at least de facto Party and Cabinet backing; from which flowed;
4. Formulation notably lacking any direct worker and peasant input and marked by substantial technical personnel doubts as to the true costs and results of the menas initially proposed without the emergence of any viable alternative;⁴⁸ after which;
5. a final political decision to act (on a scaled down basis) was taken; and

48. The hand bakery/cooperative production complemented by public sector procurement/marketing support could only have emerged as a serious contender in the context of detailed discussion with Dar es Salaam Ward and Cell Party leaders who might have been able to show that expertise and core groups of potential bakers did exist. While the Automatic Bakery case is not one in which it is probable that neighborhood input would have been such as to alter the decision articulation process, in other cases - e.g. co-operative shops, urban markets - it almost certainly would have had that result with both economic and social gains. The absence or weakness of participation at this stage is illustrated by the Automatic Bakery case whether or not in this particular case it affected the actual outcome.

6. Implementation proceeded with reasonable although not outstanding efficiency as to controlling costs and realizing output goals but rather less in keeping the process on schedule, maximizing Tanzanian involvement or seeking to overcome the problems which had caused the approval of the Automatic Bakery in the absence of an effective decentralized (District) parastatal sector; and
7. Review beyond the most formal checking of progress was episodic not only at technical but even more at political level with the exception of the somewhat special debate noted earlier which did not really relate directly either to the project or to the political decision making process; with the result that
8. Revision and New Insights either in respect of the Automatic Bakery itself or of the type of decision of which it is a representative have not been particularly numerous or significant.

These 'lessons' do not demonstrate, nor seek to demonstrate, whether the Automatic Bakery decision was the best available one at the relevant time and under the actual knowledge, personnel, institutional and financial constraints then prevailing. They seek to draw upon the experience of that decision preparation and taking process so as to strengthen the process for future decisions. Learning by doing requires more than doing again and again. It requires analyzing what has been done and what has happened in order to see how it can be done better on the next occasion.