APPRAISAL OF INTERNATIONAL ECONOMIC RELATIONS AS FACTORS IN AFRICAN DEVELOPMENT

Note by the ECA Secretariat
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I. Introduction

1. For the world as a whole it is anticipated that in the 1980s a number of serious global issues will have reached a stage calling for collective action. The issues are and will continue to be the result of either failures to recognize the scale and gravity of certain world problems or failures in attempts to cope with them because they were not properly understood or because too great reliance was placed on familiar 'cures'.

2. For the African Region the bleak prospects seen for the year 2000 in global and regional projections may be (even if partially) averted by policies adopted and measures taken in the 1980s. Many of the changes in policies and measures taken will have to be decided upon and initiated in the first half of the decade. As in global matters there are risks also here of overlooking some aspects of the nature and scope of the development and economic growth problems confronting the Region and therefore of placing reliance on familiar solutions which may by the 1990s not merely intensify the problems but precipitate the very crisis or crises they were expected to solve.

3. This Note will concentrate primarily on the impact of international economic relations on some of the principal conditions and factors essential for self-reliant and self-sustaining development and economic growth and will, it is hoped, help to provide a background to the Programme of Action proposed for submission to the Extraordinary Session of the OAU Economic Summit as well as to re-emphasize areas in which concrete decisions have to be taken and mechanisms and processing of implementation and monitoring progress specified, instruments identified or established and agencies instructed. It is the conviction of the secretariat that failure in dealing firmly and clearly with problems of implementation will, as in many other cases, prepare the ground for failure.

4. The factors and conditions regarded as critical for the 1980s and whose shape has been determined by international economic relations in particular ways not apt for the pursuit of self-reliance and self-sustainment include:

   (a) the natural physical resource/raw materials base;
   (b) human resources development;
   (c) the pattern and consequences of capital formation;
   (d) technical choice and development;
   (e) market characteristics and dynamics;
   (f) intra-African economic relations;
   (g) international negotiations.
Behind these lie even more profound and complex issues such as national and regional self-images of the future, the compound of issues subsumed without analysis under the label of "the political will", the meaning of interdependence and the significance of policy making and planning in conditions where production, marketing, etc., are contracted out to private foreign enterprise or assumed to be the responsibility of unidentified, unspecified, and uninstructed indigenous agents and institutions.

5. Among the areas and concepts most likely to confuse and misguide policy makers and planners is the role accorded to trade, aid, foreign investment and debt accumulation in ensuring the initiation and continuation of processes of self-reliant and self-sustaining development and economic growth and some consideration of the shortcomings of these international economic factors seems necessary.

6. The first point worth noting is the position of primary commodities in world trade of which three unfamiliar but important features stand out:

(a) the long term decline in the share of primary commodities in world trade;

(b) the rise in the share of advanced countries in world exports of primary commodities;

(c) the increasing share of developing countries in world imports of primary commodities.

7. The second point concerns the export of manufactures from developing to developed market economies and the pertinent features are:

(a) the small share of Third World countries in imports of manufactures by advanced countries in spite of the virtual doubling of the value of this share in recent years;

(b) the highly concentrated character of exports of manufactures by developing to developed countries:

(i) by commodity,

(ii) by exporting countries,

(iii) by importing countries.

(c) the effect of the trigger mechanism which is activated as soon as imports by an advanced country of products considered sensitive such as textiles approach or threaten to exceed fixed global or national quotas and the likelihood of this mechanism being extended to many other products;

(d) the insignificance of the African Region as an exporter of manufactured products to advanced countries;

(e) the implication of (b) and (c) i.e. that those who are in are in and those who are out are out. The African Region is mostly out and will increasingly remain so as the micro-electronics revolution begins to take full effect;
(f) the insignificance of the Africa Region as an exporter of primary products and manufactures to Third World countries.

8. It will be recalled that the share of advanced countries in exports of primary products is increasing and that an extensive system of protection of their domestic markets for food and manufactured products is still taking shape. To this should now be added the considerable efforts that some advanced countries are said to be mounting to intensify their world wide export trade in order to earn the means of payment for growing imports of energy and some other industrial raw materials such as nickel, chrome and forest products.

9. In so far as financial returns from export earnings are concerned it is usual to refer to this in terms of the indexation problem or in terms of the stabilization of commodity prices. In this note however, attention is drawn to other aspects of export earnings which may be of equal significance, viz.:

(a) the very low share of retail prices of final products that accrues to producers of raw materials estimated for bananas at about 12 per cent, for tobacco less than 6 per cent, for hides, skins and leather at about 25 per cent and for cotton at between 3 to 15 per cent. 2/

These differences arise - it is pointed out - in part from the international structure of production and marketing which enables the consumer nations to remunerate at relatively high levels their domestic factors of production. 3/

(b) the substantial gains to public revenue in advanced countries from fiscal and other charges imposed on imports from the Third World. 4/

(c) the growth of negative value added in manufacturing characterized by high import intensity of production processes;

(d) the manipulation of transfer pricing by foreign and even indigenous enterprises relating to both imports and exports. 5/

(e) the growth of world cartels and their effects on income transfers. 6/


2/ UNCTAD: Marketing and distribution of primary commodities: areas for further international co-operation, document TD/229/Supp.3, Manila, May 1979, paras. 43-47, and Table III.

3/ Ibid., para. 44.

4/ Ibid., Table II. Data of the kind given in this table, prepared on a more comprehensive basis is essential for discussions with advanced countries on aid and debt.


(f) the growth in the invisibles account (including payments for technologies not subject to property rights) to which insufficient attention is paid as a result of the pre-occupation with commodity trade. 1/

10. The international trade effect can also be considered in terms of asymmetries between changing life-styles in advanced countries and their impact on output, on the demand for imports and their poverty and the persistent pattern of export products of individual African countries.

11. Some conclusions may be drawn from this brief picture: the growing inelasticity of demand in traditional markets for traditional products and the decline in the role, significant though it still is, which traditional extra-African trade can play in substantially transforming African economies; conversely the need to accelerate intra-African trade and economic relations, the possibilities of reducing the volume of foreign exchange recycled to advanced countries without affecting domestic structural changes.

12. As regards foreign investment and financial aid note must be taken of the probability of a major shortage of investible and loan funds in the 1980s. It has been pointed out that Western Europe and Eastern Europe are now net importers of finance capital (supplied to some extent by OPEC countries and even the Third World); that the debt accumulation problems of the Third World are not likely to abate as their demands for finance capital grow. 2/; that some OPEC states are now substantial borrowers. There is therefore a clear need to devote greater attention than ever to the means of economising on foreign exchange expenditures far more than in the past; to promoting trade with oil and mineral exporting countries outside the Region; to secure additional foreign exchange; to the profit and re-investment policies and practices of the private and public sectors, and to the establishment of an intra-African aid and investment system - to mention only a few required changes in policy, instruments and practices. Important contributions to foreign exchange savings may be derived from monitoring the invisibles account as a result of which the acceleration of certain national and multi-national programmes (such as the promotion of local consultancy services and institutions, the rapid build-up of specific technical manpower, co-operation in banking, shipping, insurance and civil aviation) may lead in the medium term to considerable savings for re-investment in the building up of the capital goods industries which are themselves expected to lead progressively to substantial foreign exchange savings. 3/

1/ See e.g. UNCTAD document TD/229/Supp.3 op. cit., para. 42.


3/ UNCTAD: Improving the capability of the developing countries to supply exports of manufactures and semi-manufactures - The iron and steel industry. Document TD/B/C.2/176 of 26 May, 1977, paras. 28-30 and Table 3.
13. Nevertheless, the impact of international economic relations on African
development and economic growth has been perhaps more far-reaching in the realm of
ideas, concepts and instrumentation than in substance.

14. This is clear from confusions noted elsewhere and in this note on key issues
such as: the role of domestic financial savings; the transfer of technology;
technological capabilities; international negotiations (in which it appears a point
of honour not to evaluate the problems that other parties to negotiations are trying
to solve); the 'world' market (i.e. the market of the advanced countries);
international financial institutions (which are not so much the World Bank and the
IMF as global banking, corporations allied to transnationals in the extractive,
manufacturing, transportation and marketing industries).

15. Indeed, so extensive and subtle is this impact that many Third World countries
have come to accept, contrary to theoretical teaching and to observations, that
the engine of growth is the export of primary products rather than the combination
of population, natural resources and know-how, underpinned by the capital goods
industries.

II. The Natural Resources/Raw Materials Base for Development and Economic Growth

16. The general importance of the physical resource base may be put quite simply
by relating it to investment, i.e. investment means the application of human skills
and energies, equipment, institutional services, etc., to some physical resources
such as soils, water, forests, minerals, fish, animals for purposes of converting
them from one form into another or transporting them from one place to another.
If these resources do not exist investment becomes an abstraction. If they exist
but are not adequately evaluated they often fail to be taken into account by policy-
makers and planners. If they are known in detail but no instrument is established
for their extraction, processing, management and use - if, in other words, initiatives
in these important areas are left to the accidental interest of entrepreneurs - they
of course play little part in economic growth and the prospects of improving living
levels and of reducing unemployment are diminished. The physical resources available
for conversion and transportation clearly determine the skill development pattern,
the kind of technology imported or developed for use, the kind of institutional
services provided and the directions of flow of financial and other real resources.
In the absence of imperial domains opportunities for taking advantage of resource
complementarities would depend on trade. Thus development and economic growth
anywhere requires greatly increased knowledge of natural resource endowments at the
national level together with mechanisms for determining internal and external
complementarities and for trade in such resources. It is significant that the Region
is markedly deficient in detailed knowledge of its natural resource endowments, in
national or multinational instruments for their evaluation, extraction and processing
and for intra-African trade in raw materials.

17. The importance of the impact of international relations on natural resources
begins with the long term persistence of dependence by many African countries on the
exports of only one or two principle products for promoting development and economic
growth combined with the mistaken belief that international trade is the engine of
growth where it is only an important facilitative factor. Inadequate
systematic and scientific attention has therefore been paid to other
natural resources than those in demand in extra-African markets in spite of
their known or suspected existence, which should constitute the proper foundation for expanding diversified economies capable of providing more employment and better living conditions for the mass of the people. What we therefore commonly have in Africa is a pattern of development and economic growth in which the pyramid of expansion and diversifications is, as it were, stood on its head, i.e. rests mainly on one or two export products. The pyramid wobbles alarmingly from time to time for several reasons to which reference has been made earlier.

18. It is now necessary to return to the concept of a development pyramid standing on its head and to recall that the narrow physical resource base of economic growth today has determined the narrow limits of skill acquisition, technology imports and development, institution building and flows of financial resources and to consider the challenge confronting member States individually and collectively to broaden the base as rapidly as possible. What the secretariat believes is that no programme for accelerated diversified self-reliant and self-sustaining growth is feasible if it rests on the highly selective and narrow physical resource base characteristic of the colonial and post-colonial era and that the Region can no longer comfortably assume that foreign initiatives can be depended upon to establish this base sufficiently for purposes of national and intra-African development and economic growth. This is of particular importance to least developed and land-locked countries. Whether in respect of land based resources (located on the surface or beneath it) or of resources of the Sea new, sophisticated technologies are rapidly evolving dealing with exploratory evaluation. Nevertheless, these technologies, even if their use can be secured, require a considerable supplement of other familiar and improved technologies and institutional infrastructures for their effective utilization and there is a risk that less attention may be paid to the need for urgent and vigorous development of less dramatic but equally essential capabilities such as high level manpower in several disciplines, e.g. photo-geology, photo-interpretation, geophysics and geodesy - to name only a very few - and the range and quality of supporting staff and special facilities that are required to derive full benefit from high altitude imagery. Even when these are available the results are still of very limited use without a great deal of conventional work, e.g. low altitude aerial surveying, photogrammetry, in particular increases in the national density of accurately located and permanently marked secondary and tertiary points to which photo-control points are tied; the steady and widespread assimilation of improved methods of field surveys; the adoption of advanced methods of rapid and accurate map compilation and reproduction field sampling facilities; the development of mobile and central laboratory testing and evaluation services; efforts at standardizing nomenclatures, education and training contents; methods and qualifications at all levels and branches of cartography; complex and expensive instruments.

19. The general poverty of national and regional capabilities in exploration, evaluation, inventory, extraction, transportation and marketing of land-based natural resources is reproduced in even more dramatic ways in the case of resources of the sea. Here it is worth noting that the Law of the Sea is expected to confer upon State

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1/ See, for example, Jeune Afrique: The Atlas of Africa.
sovereign rights to the resources of the continental shelf and the sea to a
distance of 200 miles offshore. The area of the shelf and the seabed affected
range from a few thousand to a million or more square kilometres and the total
area may in some cases amount to several times the size of the adjacent coastal
state. Although it is known that exploration surveys have for many years been
conducted in African waters most member States know very little of the findings of
such surveys.

6. The secretariat and member States have already made a start with regional
cartographic centres, the remote sensing programme base in Ouagadougou, the East
African Mineral Resources Development Centre and those proposed
for Central and West Africa. However, the establishment and development of these
institutions will not only have to be accelerated, a much more comprehensive, con-
tcrete programme will be required. This however depends on widespread recognition
throughout the Region of the crucial multinational institutions for underpinning
the major forward thrusts required in the 1960s and the willingness to give high
priority to their financial support.

71. This is however one step in a chain in which the next as suggested earlier is
the establishment of instruments of production familiar in Brazil, Mexico, India,
the Philippines and many other Third World countries for the extraction and processing
of iron minerals, i.e. national (or in Africa, the multinational) mining
companies associated with a regional financing institution entrusted with mobi-
lization and redeployment of financial resources for the required expansion of raw
materials for diversified, self-sustaining economic growth. Such companies already
exist to some extent in the field of petroleum and natural gas but this pattern is
again the outcome of the need to deal with a product intended for extra-African
export rather than for intra-African production of intermediate and final products for intra-
African use. It may be thought that such proposals are too far-reaching and un-
realistic but this would be due to failure firstly to consider evidence not only
within Africa but also in other Third World countries of the feasibility and necessity
of such arrangements and secondly of the need to begin planning as soon as possible.
The question of urgency is not difficult to illustrate: an iron and steel plant of
moderate size and standard design would require some 4 to 5 years (from the date of
placing specific orders) to fabricate, transport, erect and bring into operation.
This does not take into account the time required normally for putting together the
package of manpower, technology, equipment and services and finance for mining the
ore supplies it requires nor, at the other end, of the time, mechanics and problems
involved in training the large number of draughtsmen, sheet metal workers, instrument
and tool makers, welders, machine tool operators essential for the development of the
metal and engineering industries with which the plant is to be connected. No
advantage can therefore be gained by delay.

III. International economic relations and the Development of Human Resources

1. Economic growth is fundamentally the outcome of the application of human energetic
and skills to available natural resources and in the African context this would mean
the natural resources or raw materials that constitute national endowments or can be
obtained by exchange in trade. The link between population and natural resources is
thus mainly relevant know-how (mainly for management, production, R & D and marketing).
To the extent therefore that the physical natural resources base is unknown to that

1/ In this context know-how is used somewhat arbitrarily as a surrogate for education
and training of all kinds, both formal and informal.
extent is planning for economic growth limited. To the extent that the pattern of
know-how acquired, improved and multiplied is irrelevant to the identification,
exploration, inventory, extraction and use of potentially natural resources or to
the organization of exchange in trade (to facilitate the exploitation of complementa-
rities) to that extent is growth held back and poverty and unemployment allowed to
grow. It must be obvious that populations in heavily forested areas should primarily
be equipped to extract, process, trade in or use forest resources efficiently rather
than acquire organizational, production and marketing skills pertinent to the
natural resources of savannah regions.

23. In general, therefore, the pattern of acquisition, improvement and multiplication
of know-how has been severely limited not only by the very narrow base of physical
natural resources actually being exploited in modern terms but also by a considerable
degree of irrelevance of the know-how that is available. The extent and degree of
irrelevance will become clearer in the examination of capital formation and of
technology which follow later in this note.

24. The Africa Region has apparently sought to correct this weakness by increasing
reliance on technical assistance financed from their export earnings, from debt
accumulation or by both, by gifts from bilateral and multilateral donor agencies or
as part of foreign private investment. Experts have come mainly from developed market
economy countries but also from Comcon member States. There is estimated to be in
the Region today two to three times as many technical assistance experts as there were
in 1960. During this period the Region has not succeeded significantly in broadening
its knowledge of its natural resource base, in establishing capabilities for their
efficient extraction, management and use or for the intra-regional identification
and exploitation of resource complementarities through direct trade or joint produc-
tion. Complementarities continue to be established on a global scale outside by the
Region by advanced countries and transnational corporations for their own purposes.

25. Thus not only is the pattern of know-how insufficient for the present it
promises to be insufficient for the future - even more so.

26. The failures relating to natural resources, the poor performance of the Region
as a producer of manufactures both for its own use and for export, 1/ the rise of
the food problem all attest to the extraordinary extent to which know-how policy has
failed. A few distressing examples are worth quoting. One is the almost total
absence of national capabilities in carrying out pre-feasibility and feasibility
studies with consequences not only for the conservation of scarce foreign exchange
(or for the accumulation of foreign debt) but also for choices of technology and
their implications. Similarly deficiencies in national programming capability can be
seen in dislocations in the planning and execution of related projects of in severe
port congestion or in failures to take account of the transport component in large
national projects. The weaknesses of many member States in bilateral negotiations

1/ UNCTAD: Recent Developments in Trade in manufactures and semi-manufactures of
Developing Countries and Territories: 1976 Review; document TD/B/C.2/190 of 21
March, 1978. See also ECA studies on metals and engineering, chemicals, and
building materials.
with e.g. transnational corporations whether as regards background information, mastery of technical detail or tactics are by now too familiar to need recounting.

7. It has been argued that an important contribution to weakness in manpower capabilities is due to the brain drain. Whilst it is true that this Region can ill afford any kind of brain drain (external or internal) and that every effort must be made to bring it to a halt or reverse it, the question must be asked whether, in the absence of the brain drain the Region would have been able to a significant extent to handle its natural resources problems as described earlier or those of capital formation, technology and markets deal with below. It is possible to conclude that as with demands for more - rather than more relevant - technical assistance, the brain drain issue, however valid in its own right, distracts attention from the more important issues mainly the broad irrelevance of the present pattern of acquisition, development and multiplication of know-how, the dangers of extending this pattern to segments of the population at present outside the know-how acquisition system (the rural population, women and the young) and the impact of this pattern on the prospects of diversified self-reliant growth in the 1980s and 1990s.

8. It is now necessary to place the human resources development issue against a wider background. The population of the Africa Region is expected to double from an estimated 606 million in 1975 to an estimated 868 million in 2000. This will mean substantial net addition to the labour force which cannot, if present policies and measures continue, be accommodated either within the urban or the rural economy. Circular migration from the villages to the few towns and back with the promise of economic, social and even political instabilities being intensified. The extent to which these may be mitigated may depend on the

(a) The rapidity with which knowledge of the natural resource base and its uses is determined (including in particular local small scale natural resources);

(b) The rapidity with which the swelling segment of the labour force is equipped with usable know-how, i.e. know-how related to the extraction, management and use of these resources;

(c) The extent to which capital/labour substituting technologies are allowed to spread; or conversely, the extent to which employment creating technologies are supplied to the growing work force in situ as part of policies of integrated rural development, rural industrialization and human settlements;

(d) The rapidity with which entrepreneurial cadres1/ are provided with relevant support services;

1/ The term entrepreneur does not in this context necessarily imply persons or institutions inspired by the search for private profit. Support services would include: business information, industrial consultancy, industrial estates, development financial institutions manned by a wide range of specialists or having access to them, specialist services in packaging, transportation and marketing, etc.
29. It would therefore seem obvious that solutions to the problem of equipping African populations with usable know-how cannot be confined to conventional concepts and methods of education and training. Research into teaching and learning processes with a view to their acceleration and multiplication is urgently required. Multiplication methods where already established and tested must be widely and rapidly promoted. This will also apply to self-teaching techniques. Every effort will have to be made to exploit as fully as possible all facilities for education and training especially those connected with skill acquisition related to the regional and multinational programmes approved at the OAU Economic Summit and to their national components. Equipment and supplies for teaching and learning purposes must constitute an important component of the industrial programme. A central feature of the whole teaching/learning process must be the intensive use of the demonstration effect in which study tours will figure prominently and which will rest inevitably on a recognition of the need to share know-how through economic co-operation.

30. What the Region in effect faces is a major revolution in the acquisition, development and multiplication of know-how.

IV. Impact on Real Capital Formation

31. For the sake of simplicity we define capital formation as the process of creating goods or physical assets essential for producing other goods, or physical assets, e.g. not only roads and bridges, ports and harbours, railways, automotive vehicles, office and factory buildings, R & D establishments, ships and aircraft but also machines parts, components and accessories thereof as well as implements, tools, instruments, fertilizers, plastics and other petrochemical products. The process of capital formation is therefore closely connected with the building and construction, metals and engineering and chemicals and petrochemical industries.

32. The first major feature of capital formation in Africa is the very small part of it that depends on internal factor inputs and production. Even simple implements and tools, (including carpenters' tools), instruments, parts, components and accessories are mostly imported. 1/ The second major feature is the extent to which the requirements of production for export of beverages, crops, minerals, fibres, oilseeds, forest products, etc., have determined the pattern of capital formation.

33. Production for export has similarly determined the third feature - the geographical distribution of capital formation at both national and regional levels - and the fourth feature - the characteristics of capital formation.

34. As regards the first feature it is well known that significant capital formation in Africa in the factor input and production sense and taking the rural as well as the urban economy into account has been mainly in building and construction. Once the rural sector is expected building and construction displays a truly astonishing degree of import dependence. In regard to metals and engineering industrial policy has so far been directed towards assembly rather than production.

It has to be said again and again that the largest machine in the world is made up of parts and that the inability to manufacture parts implies the inability to build machines, even of unsophisticated kinds. However, the production of parts, components, implements, tools, etc., depend on the existence or importation of appropriate machine tools which in turn require inputs from metal forming industries which, for the Region, calls for the expansion of mining and development of trade in mineral ores and other inputs into metal forming industries.

35. As regards the extent to which real capital formation has been influenced by the relatively narrow requirements of production and marketing of export products the pattern of transportation and communications stands as sufficient evidence. For example, capital formation in mining, railways and ports and in mining towns is almost everywhere designed to serve as enclaves and where mining production terminates the country is left with derelict mining equipment, railways and ports and often with a large body of experienced operatives (a highly valuable asset in the Region) which may easily be dispersed as redundant. Yet in countries in other Regions it is the mining sector that has provided the initial impetus for the local production of iron and steel and other metals and for the engineering industry to provide an increasing range of inputs into mining, then railways, docks; building and construction and the electric power generation and distribution industries. Indeed, the most substantial centres of engineering activity are often linked to or for part of crop and mineral production and transportation for extra-African export.

36. Similarly, the narrow product range and location specific character of production and transport of export products has sharply defined the geographical distribution at national and regional levels of capital formation. The enormous and familiar lacunae in the transport network at both national and regional levels is ample evidence of this influence. The deficiencies in the telecommunications network (both national and regional) and the relative isolation of land-locked states, not from potential African markets but from overseas markets for the few export products in which international (i.e. extra-African economic relations) have forced them to specialize, provides additional support for this argument.1/

37. The fourth feature of capital formation in Africa up to the present - its character - is perhaps best illustrated by reference to a number of wider considerations.

38. The first consideration is the extent to which specific export products can generate forward and backward linkages and the extent to which the skill and technology complement of their production and processing for export are capable of widespread application in the economy. Diamonds and other precious stones have very limited multipliers of this kind. Beverages, in general, are similarly limited and so are spices. The exploitation of the permanent real capabilities of this kind that bauxite can make possible depends on the availability of cheap electric power.

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1/ It is simply untrue that least developed or land-locked countries in this Region are least developed because they lack natural resources suitable for transformational investment.
39. Iron ore requires other complementary inputs for the full range of linkages, skill formation and technology transfer to be exploited. The dominant products in the export pattern of individual African countries until recently - and even now - thus seriously affect not only the pattern of capital formation related to exports but over a much wider range of production activities. Another consideration is the current debate on the justification of local processing in Third World countries, of (especially) mineral, forest and energy raw materials, before they are exported. Implicit in this debate is the assumption that processing must necessarily be for export to developed market economy countries and is irrelevant to the needs of real capital formation - or indeed the production of consumer goods - not only in the producing country but in the region to which it belongs. So deeply rooted is the influence (extra-African) export-consciousness and so pervasive are structures of vertical integration that representatives of member States often take part in those discussions in order to stress local financial benefits likely to accrue from local processing rather than the essential contribution this may make to local real asset creation.

39. Even more extraordinary are the periodic campaigns to encourage African, among Third World, countries to promote domestic financial savings apparently without taking into account the correspondence between financial savings, and the availability of appropriate domestic factor inputs and the relationship of factor inputs to the capital goods industries required for converting savings into investment goods, i.e. into broad-gauged real capital formation.

40. It is necessary to recall once again that demographers anticipate the doubling of the Region's population from an estimated 406 m. in 1975 to an estimated 877 m. in 2000.

41. Leaving aside the by now familiar case of food it is pertinent to ask what is likely to be the impact of this doubling on the demand for drinking water, i.e. for water pipes and pumps, for cotton cloth, pedal bicycles, non-electrical sewing machines, canvas or plastic shoes, pharmaceuticals and vaccines to contain endemic diseases, pulp and paper, traditional building materials, educational supplies even assuming that the percentage of the population that now has access to these goods will remain the same in 2000. The most casual examination of data suggests that it will be quite out of the question to assume that these increases can be met through imports financed by foreign exchange earnings, gifts or further debt accumulation, and that the Region has no alternative but to begin the planning of their local production. There are at least four points of caution requiring decisions on such planning. The first is that many of the raw materials required still remain inadequately explored or evaluated and still remain in the ground. There is no escape from the need to expand raw materials extraction and refining capacity. The second is that primary raw materials apart, if dependence is placed indefinitely on imports of production inputs, the build-up of negative value added may escalate so rapidly and be so large as to intensify the foreign exchange constraint very early and bring the whole process to a halt. The third point of caution is that dependence similarly cannot be wholly placed on initiatives by foreign private enterprise whose corporate incentives

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and motives tend to differ substantially from those of national policy-makers and planners and who, in view of the extensive under-utilization of fixed capital assets at home can understandably not view industrial capital formation in the Third World with enthusiasm. The fourth point of caution is that the indiscriminate adoption of highly capital intensive methods of capital formation are likely to bring in more troubles than they solve: the foreign exchange drain, a low level of reproducibility of capital goods; the difficult and dangerous process of balancing between encouraging high corporate savings by a few conglomerates for further investment, and the distribution of money incomes; the consequences of promoting large industrial cities in which huge quantities of materials and a large labour force are concentrated in contrast to a more widespread and more rapid process of capital formation making full use of local raw materials, energy and labour.

43. Quite clearly a programme for the development of the capital goods industries must include: the setting of quantitative output targets for selected ranges of finished products; the evaluation of present output capacity of the relevant extractive industries; the determination of new output capacity and its location; the evaluation of smelting and refining capacity and for capacities for intermediate treatment in relation to target outputs; the status of the machine tools industries; mechanisms for the mobilization and deployment of financial resources; programmes for the rapid training of skilled and semi-skilled manpower; the specification, instruction, etc., of agents and instruments of action.

44. In regard to the supply of technical assistance in the form of experts an urgent examination of the technical composition and functioning of technical assistance experts (and of the failures and successes in providing African counterparts for them) is required. Technical assistance experts, it is worth noting, correspond to a substantial part of the flow of foreign exchange into and out of the Region.

V. International Economic Relations, Technology and Development in Africa

45. The role of technology (i.e., extensions to man's natural physical and mental capabilities) has come in the 1970s to occupy an important place in reviews of and negotiations over international economic relations in view of its importance for accelerating and diversifying the growth of output of goods and services and of raising levels of living as well as in view of its impact not only on employment and income distribution but also on the quality and meaning of life and work. Several important aspects of technology require comment in order to avoid the confusion that has now grown over the subject.
46. First it must be pointed out that technology concerns materials, shapes, functions or reactions (particularly as with chemicals) and the application of fuel and energy. In effect it is tied to things and the narrower the range of things involved and their mechanical and chemical behavioural qualities the more limited is the scope of technological development. If materials, shapes, functions and reactions were immutably fixed, the only technological problem would concern size. It is therefore the richness in changeability of these and other elements that provides the basis of technological adaptation.

47. Second technological capability is essentially and primarily invested in specific persons or institutions. Recent research has gone further to identify not merely persons but critical role playing requirements if R & D institutions are not to deteriorate into tourist centres. As has been said an applied research institute whose work is not applied is a theoretical research institute.

8. Third, technology has meaning mainly in use. In general it is the outcome of attempts to convert things from one form into another or to use them - as products - in one way or another. These are facts familiar to the peasant farmer or village craftsman but often forgotten in high level discussions. The question then arises, what are the things (natural resources/raw materials) that the peoples of the Region - farmers, manufacturers, farmers, craftsmen, etc., want to convert from one form to another or to use in one way or another and in respect of which they lack the capability - known to exist elsewhere or not yet determined anywhere - for doing so. What kinds of institutional arrangements and kinds of persons working within these institutions are required for the production of technologies and making them widely known and adopted.

6. The final point is what has been the impact of international economic relations in determining firstly the things that are to be extracted, converted and used, the availability of know-how for such conversion and use, and the extension of this know-how to other products and processes.

D. Science and technology entered the Region along very narrow channels linked to the production, storage and transportation of beverage crops (coffee, cocoa, tea), oilseeds (oil palm, cotton and groundnuts), forest products, minerals, fibres, tobaccos, and such other miscellaneous items as animal hides and skins, spices. In the case of agricultural export crops so narrow were the channels designed that no significant spillover into food and other agricultural production occurred until well after the Second World War. Even when local processing before export began the technology - whether in terms of know-how embodied in persons, or of materials such as blue prints and equipment or production formulae and operating manuals - were imported as a package. The incorporation of processing industries in vertically integrated enterprise structures extending from raw material production or procurement to delivery of final products to the consumer, the standardization of production processes and rationalization of company operations inhibited local experiments in materials inputs, equipment design or production formulae. In any case such experiments would have been constrained within the range of traditional export products.
As will be shown below local markets were too small and too fragmented to justify local R & D and variations reflecting local peculiarities.

51. There were other adverse factors. One was the control over government purchase and supply exercised by centralized agencies in the metropolitan country. Another was the deliberate centralization - in the interests of economies of scale - of research institutes dealing with tropical and other African products in the metropolitan states.

52. Education and training systems in the Region placed emphasis, so far as technology was concerned, on the development of capabilities for simple assembly and for maintenance of structures and equipment. Although some of these constraints have been modified or removed there has been no really massive indigenous movement to repair the weaknesses inherited from the colonial era. The extreme outward orientation of many socio-economic systems, the narrow natural resource base on which they are built and the virtual absence in many countries of the engineering, particularly the capital goods, industries has practically guaranteed the continuation of built-in weaknesses in the development of local technological capabilities. There thus exists neither a meaningful demand for converting natural resources from one form into another or using them in one way or another nor an environment which actively and urgently encourages the establishment of such capabilities.1/ For example the present international debate seems to be primarily concerned (with some notable exceptions) with problems of the mobilization of demand so that governments may come to believe that if they establish technology information centres, patent offices and the like they are genuinely building up technological capability. In Africa demand is latent and passive. It is latent for example in the area of rural and small scale industrialization or farm production areas in which technologies exist or can be developed to improve production or storage or processing or transportation. It is passive in the sense that in the public sector as well as in the private foreign and indigenous sectors the demand is for pre-determined packages of equipment, raw materials, and production, etc., routines.

53. So extreme is the impact of this external orientation on technological dependence and its consequences that an illustration is necessary. One of the commonest reasons for undertaking R and D activities and the production of technology is to find more economical ways of using an industrial raw material of increasing scarcity or to find substitutes for it. Scarcity however, has a specific meaning in time and place to the organizer of R and D. It does not mean that the raw material in question is physically scarce in, e.g. Africa, Asia or Latin America or that its local price is rapidly increasing. It merely means that the manufacturer is obliged to pay a high price for access to supplies delivered conveniently to metropolitan depots or production sites. The outcome of such R and D if successful and if widely adopted in advanced countries may then render redundant the supply of the raw material in question. The new technology is then introduced into Africa

1/ The difficulties encountered by African inventors are often not even recognized by policy-makers.
and the Third World as the most economically efficient in spite of the continuing abundance of supply and low price of the raw material in these regions. Thus irrelevant technological biases often characterize imports of technology from advanced countries, reflecting their own circumstances and needs.

53. In so far as active demand (requiring a search for solutions to production problems) is concerned demanders are more commonly to be found among foreign enterprises and the research institutes in advanced countries with which they are associated, e.g. the Tropical Products Research Institute in the United Kingdom, or among international agencies such as the World Health Organization, the United Nations Food and Agriculture Organization, UNICEF and the like. It is true that directors of departments of agriculture, forest resources, fisheries, geology and mining, medical and health services, etc., in virtually all African countries are highly conscious of the need for concrete and specific R and D and that they sometimes succeed in extracting resources for this purpose but their influences on general policy and resource allocation is limited partly reflecting the history of civil service power structures since colonial times.

54. Demand has now, however, become explicit and active in two great areas of production (agriculture and industry) as a result of ministerial decisions taken in the past few years relating primarily to food, forest resources, chemicals, metals and engineering, building materials and secondarily to the search for, extraction and management of their raw materials base. A limited concrete and practical programme which matches these decisions would thus include: the detailed spelling out of the R and D requirements of each production programme, assessments of existing facilities within the Region, consultations on the strengthening of existing facilities measures for establishing new facilities (including finance and manpower), the effectiveness of R and D relations to production on the one hand and on the other technical mechanisms for diffusing innovations and the rationalization of relationships and programmes of R and D institutions working in the same or in related fields.

55. What then are the kinds of institutions these are likely to be?

56. The emphasis on production as the necessary foundation for establishing technological bridges leads from the current concern with such questions as the costs and conditions of transfer of technologies. As a matter of fact the bulk of technologies in daily use in modern production all over the world is entirely free of restriction and nothing hinders their use in Africa save the lack of general capabilities in organizing manufacturing production and distribution, a factor referred to earlier in connection with capital formation in the region.

1/ In almost all cases the technology component is already indicated in proposals submitted to the Technical Committee of the Whole for sectoral priorities in the Plan.
57. It is therefore the unit or centre engaged in the processing and conversion of raw materials into semi-finished and finished products that provides the matrix for the production of technology and the secretariat takes leave to quote the following passage in illustration of the kind of institutional arrangements suggested:

The great strength of Shanghai and Tientsin lies in experience. With their 'skilled veteran workers and experienced technical persons' and superior development of inter-enterprise co-operation, another legacy of the past, 'old industrial bases and old enterprises... find it easier to tackle ... complicated technical problems than new enterprises and new industrial bases'.

With these advantages, it is the established centres which are best able to copy and modify foreign equipment samples, to extract useful information from foreign technological publications, and to apply it to current domestic problem areas. More generally, experienced firms act as technological intermediaries between the mass of Chinese producers, whose mission is to attain 'advanced national levels' of quality, cost, and techniques, and the outside world, whose standards become the target of Shanghai's technological aspirations.

Technical advance penetrates the economy along well-developed lines of communication which include worker exchanges among units of differing technical levels, national and local meetings focused on particular problems or on 'exchanging advanced experiences', national journals for machinery, chemicals, metallurgy, and other industries, and several Shanghai journals devoted to publicizing technological gains of Chinese and foreign origin.

Campaigns to 'emulate the advanced' and to 'learn from Shanghai' illustrate this diffusion process."

58. The Japanese realized at the beginning of their effort to industrialize the crucial importance of the transferee: the potential recipient, user and developer of transferred technology. They had no alternative but to fall back on state enterprise. They established public enterprises "as the central focus of industrial and technological development in the modern sector and these enterprises served as model factories where new production techniques were demonstrated for domestic diffusion purposes; skill training conducted for workers and experimental work initiated on adaptive exercises". These factories were not set up to run on commercial lines or make profits or compete with the private sector. They were rather like teaching companies analogous to teaching hospitals. When one considers the sectoral spread of African private entrepreneurship today (small-scale farming, petty trade, export/import trade, small-scale transportation, building and construction, some banking and insurance, small-scale industry), its origins, motivations, sectoral preferences and limitations it is difficult not to enquire what should be the role in

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technology transfer, adaptation and development of public enterprise in Africa.

59. Neither the Japanese, in the late 19th century nor the Chinese in the 20th century left the matter of technology open to chance. They were clear about national goals; they took the trouble to understand the scientific and technological realities intervening between what conditions were and what they desired for their countries. Their approaches were deliberate, structurally designed, practical and flexible.

60. They did not leave matters to destiny, international conferences, scientific councils or transnationals. They did not merely study reality and determine related objectives, they planned. They did not merely plan, they acted.

61. Several questions therefore arise since technology grows out of institutional activity in solving production problems what and where are the national institutions (railway workshops, public works repairs and maintenance and repair services, forges and foundries, and other metal working establishments, factors, etc.) where such activities as the following can be carried out:

- The process of stripping down translation of parts into blue prints, and re-assembly of equipment;
- Experimental manufacture of parts;
- Experimental re-design of parts and components;
- Experimental substitution of materials;
- Experiments in power engineering;
- Testing equipment for adaptation to local environmental (dust, humidity, etc.) and cultural conditions, for reduced maintenance requirements.

62. What models of such institutions and activities are familiar to African policy-makers and planners?

63. What mix of skilled manpower is required for setting up, developing, and operating such institutions and the activities carried out in them?

64. What mechanism exists at national levels for determining the allocation of resources for the careful and programmed importation of equipment for experiments such as those described?

65. How can plans and programmes of this kind be facilitated by standardization and bulk purchase arrangements?

66. What arrangements can be made for spreading production and experimental know-how from one enterprise to the other and from one part of the country to the other?

67. These are some of the important question which international economic relations up to now have inhibited and must now be asked and answered in concrete planning terms as a matter of urgency.
VI. The Impact of International Economic Relations on Market
and Marketing in Africa

68. Markets, as was noted elsewhere, constitute one of the major constraints on the
economies of both developed and Third World countries and are of particular importance
in Africa in view of the very large number of small-scale economies. The subject of
markets is given separate treatment in order to draw attention to allow a somewhat
extended consideration of some of their main general features and dynamics at the national
level since these are important determinants of the character and potentialities of
multinational and even regional markets, particularly when consideration is given to
the large number of sub-markets constituting a single national market, their links
with advanced industrial economies, the manner in which they develop and change shape
and so on and how these factors will affect any attempt to combine national into
multinational markets and that could happen if these attempts were successful.

69. The first outstanding feature of markets in Africa is the composition of demand
for different product lines reflecting the energy but as yet not overwhelming
differentiation in income distribution (both in terms of net salary earnings
including fringe benefits and of the distribution of publicly provided goods and
services. In Africa the most commonly noted difference is between urban and rural
incomes in which money income differences tend to be exacerbated by the distribution
of publicly provided goods and services and by the tendency of incomes in internal
terms of trade to work, for a variety of reasons, against rural populations.

70. Even within the rural sector, the geographical impact of external demand for
specific export products (beverages, oilseeds, fibres, minerals, etc.) creates income
differences. Some of these locations of superior advantage crystallize into growth
poles raising the usual questions of 'spillovers' and backwash effects. In the
absence of special measures income 'however defined' in a developing socio-economic
system tends to be unevenly distributed over space. An upsetting recent factor in
rural income differentials (arising from factors other than location and landholding
is the marked tendency of new agricultural technologies to widen such differentials.
Here we may have one or all of three factors at work: an advantageous location (such
as fertile, watered soils or the near accessibility of water for irrigation, access to
working capital not available to all others and political, social or economic
influence.

71. The importance of income distribution i.e. of course, that it determines, in broadly
market-oriented economies, the character and economic significance of the different
sub-markets (including the markets for raw materials and intermediate goods) within
the national system and therefore not only that is produced but how and is produced, how
it is produced and why it is produced. It is noteworthy that unplanned gains and
foreign exchange arising from the discovery of oil or minerals tend to exacerbate money
and real income differences and to exaggerate semen in imported products whose
local production is unfeasible or possible only at considerably subsidized costs.
Super-imposed on this is the effect of the use of usually capital intensive methods
of exploitation of such export products. The rapid expansion of the extractive
industries to provide the raw materials for industrial programmes may therefore lead
in the absence of deliberate incomes policies together with some emphasis on the
production of food and other wage goods, to an intensification of income differences
to the emergence of con and patterns which may defeat the long term objective of self-
sustained industrial and agricultural development and to an enlargement of the
drain of foreign exchange. The heart of the matter, however, is the overlay of income
classes in Africa and in advanced industrial economies and the opportunity this offers
for facilitating the (mainly urban) international consumption demonstration effect.\textsuperscript{13/}

The larger the overlap and the more persistent it is \textsuperscript{14/} the greater the potential impact of the I.D.C.E. Actual impact is also possible on the one hand by modern
technologies of transport and communications, by the adoption in developing countries
of import substitution industrialization and on the other by the search of trans-
national for market outlets. In this search, transnationals report to a wide range
of techniques including mass advertising, promotion of brand names, consumer credit,
market research, induced obsolescence, restyling, attractive packaging, promotional
giving, etc. These tactics may be led by the establishment of local assembly plants
behind tariffs and other protective measures and the integration of "production" with
marketing. The object is to create off-the-market represented by the overlap, i.e. the
market whose income level makes it worthwhile to bring the pattern of demand into line
with that of the same income class in the transnationals' home base or bases. Two
striking characteristics of this market structure are firstly the technical fragmen-
tation of the market — several differentiated products serving the same technical
function, creating sub-monopolies and inhibiting local production on an economic
scale. Secondly, the acceleration of product substitution claims "cotton and wool to
rayon to nylon to polyester textiles...". The third operation is often slowly extended by the
development of sub-markets for second-hand products at not too much lower income levels

71. Several grave consequences follow from this pattern of markets and marketing and
their dynamics. The first is the tendency for the market to be dominated by trans-
nationals and large foreign enterprises who have a "greater capacity to finance mass
marketing, new product acquisition and equipment costs". The second is that the
industrial sector is more narrowly specialized, more import intensive and less capable
of developing backward linkages. The third is that our country becomes more dependent
than before, as markets grow and differentiate, on imported technology and the trans-
national finds little need to undertake the often costly business of adaptation.
The fourth is the definition by exclusion of a "poverty market".

73. Thus the characteristics described raise questions as to the realism of expecting
that the combination of even several national markets can provide the foundation for self-sustaining growth. That a large and increasing reservoir of unemployment and
consequently of mass poverty will remain is obvious. The transformation of domestic
markets from the point of view of effectively reducing mass unemployment and poverty
clearly goes beyond income distribution and affects what is produced (or basic needs)
and how it is produced (mainly technology).

74. The restructuring of domestic markets to provide simultaneously a broad base of
homogeneous demand for industrial production, to expand employment opportunities and

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David Felix: Technological Dualism in Late Industrialisers: Technological Dualism in Late Industrialisers: On Theory, History and Policy, The Journal of

Evaluation of Latin American experience suggests that manual income differentials
persist in spite of numerous and varied measures to reduce them. See Foxley, Nathan and
Alexanders, Chile: The Role of Asset Distribution in Poverty-Focused Development
Strategies, World Development, January/February 1977, Special Issue. See also Justir
Introduction, Emily Leis Development and Income Distribution: A Case Study of Sri
to reduce mass poverty will clearly conflict with the trends in market characteristics and dynamics described earlier in this note. A good deal of the regulation of external trade and of the use of trade marks, brand names, advertising and other promotional techniques will have to be brought under stricter scrutiny than at present. Trade marks policy and legislation will call for early examination. Standardization will require to be advanced at a less leisurely pace than seems to be the case at present. At the same time the role of transnational corporations in advancing, hindering or giving particular shape to market integration arrangements will call for a careful study as it has been given in Latin America.2

VII. The Impact on Intra-African Economic Relations

75. One of the most commonly recognized features of the Africa Region in economic terms is the very large number of relatively small and weak economies reflected, for example, in the fact that 10 of the 31 least developed countries of the world are located in Africa. This factor derives mainly from the impact of the process of colonization and the formal recognition in the Berlin Conference of 1885 of the pattern of colonies which later constituted the States members of the Region. Reinforcing this pattern has been the introduction of international foreign languages, and biases in modern culture, education and other biases with far-reaching consequences for development and economic growth today. One of the concrete and observable consequences is the fragmentation of the transport and communications system which not only isolated individual countries or groups of countries from each other thus heightening the effect of size on economic growth potential but the enclave character of national transport and communications systems designed to serve mainly the extraction and export of agricultural and mineral products. The integration process, which African countries are trying very hard to reorganize on an intra-regional basis was designed to promote what now clearly was a considerable degree of unbalanced specialization in production and to rivet the production enclaves to the metropolitan economy.

76. Natural resources/raw materials complementarities were determined in the metropolitan country and economies of production scale depended on individual country relations with the metropolitan rather than with other African economies. Surplus funds not siphoned off through the operations of metropolitan bulk purchasing and procurement agencies and of almost exclusively metropolitan enterprises, were centrally mobilized through marketing and currency boards located in the metropolitan capital. This was combined with a fairly strict local fiscal policy.

77. When these factors are combined with the narrow range of product specialization for export noted earlier and the effect of this range (and of the degree of local processing) on the pattern of skill acquisition, of technology imports, of physical and institutional infrastructure, and of the flows of financial investment and real capital resources, it is not difficult to see where lies one of the major causes of the lack of success in erecting, at national levels today, integrated and rapidly expanding economies capable of growth and diversification and of providing employment and improved living levels for increasing populations.

78. It is remarkable that the high degree and wide range of vertically integrated foreign enterprises in raw materials extraction, processing and marketing operating in Africa today continue, in effect, the structure of colonial economic organization.

79. Perhaps the most debilitating of all was the almost total dependence on nearly exclusively foreign agents not only for initiatives in investment and production but also largely non-indigenous agents and channels for intra-African communication and consultation regarding economic matters: chambers of commerce, shipping and mines and the metropolitan committees (e.g. for West Africa, the West Indies, etc.) to which they were linked.

80. Until this day many of these impediments to intra-African economic relations remain. The fragmented pattern of transport (including the peculiar geographical structure of air transport) remains and may well be reinforced, African intentions to the contrary, in the 1980s. Plans to establish an intra-African telecommunications network seem to be in danger of coming to a halt. Dependence is still largely placed on initiatives by foreign investors and private enterprises not only to provide more ample and more exact information on the natural resources/raw materials base but to extract and process them and to determine their complementary use. Even where national chambers of commerce, mines and shipping have, as it were, become substantially infiltrated by indigenes there is still insufficient working contact among them. This applies even more to state trading organizations. Yet a greatly intensified degree of communication and consultation and of working relations is a necessary condition of the promotion of intra-African trade. Some effective steps are being taken in the field of banking and currency but an intra-African payments system still depends on the availability of surpluses of international currencies to facilitate intra-African exchange of goods and services and a well organized intra-African aid and investment system seems to be decades away.

81. As far as production and marketing are concerned (leaving aside the problem of standardization) proposals for close working co-operation among public utilities, state enterprises, development corporations and the like with the possibilities of joint backward and forward linkages remain on the drawing board, whilst scientific and technological research and experimental development in industry at the multinational level has only just begun to attract attention. In agriculture, co-operation
is either non-existent or agonizingly slow. This is remarkable when it is considered how far agro-climatic and geological zones transcend national boundaries in the Region as is evident from the most cursory study of the vast network of river and lake basin systems and such striking geographical and geological features as the African Rift Valley, the Region's enormous potential oil bearing areas (both onshore and offshore) and the equally large hydro-power generating capacity of African rivers.

83. Since technological and organizational know-how constitute one of the most crucial bottlenecks in African development and economic growth a tough regional policy for exploiting every available source of multiplying specialized know-how would be expected. It would concentrate particularly on the exploration, evaluation, extraction, conservation, transportation, marketing and conversion of strategic national resources into semi-finished and finished products and as such would extend well beyond the limits of formal education. The organization of the production demonstration effect would require the selection of centres of production within the Region to serve as centres also of research and experimental production, demonstration, extension service and teaching. The selected would establish links with formal education and training institutions and with industrial estates, consultancy companies and development financial institutions as well as with such regional bodies as the Regional Centre for Engineering Design and Manufacturing, the African Regional Centre for Technology, the regional centre for Management Consultancy as well as with national and multinational state trading organizations.

83. One risk remains: that important segments of these activities might be taken over, as they have been elsewhere, by foreign transnational and other enterprises for their own purposes.²/

VIII. _International Negotiations_

84. The secretariat submitted a document E/CN.14/760, E/CN.14/WP.1/12.1 entitled _International Economic Relations as Factors in African Development_ which deals mainly with this subject.

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²/ See footnote ¹/ on page 22.