

Economic dimensions of urban renewal

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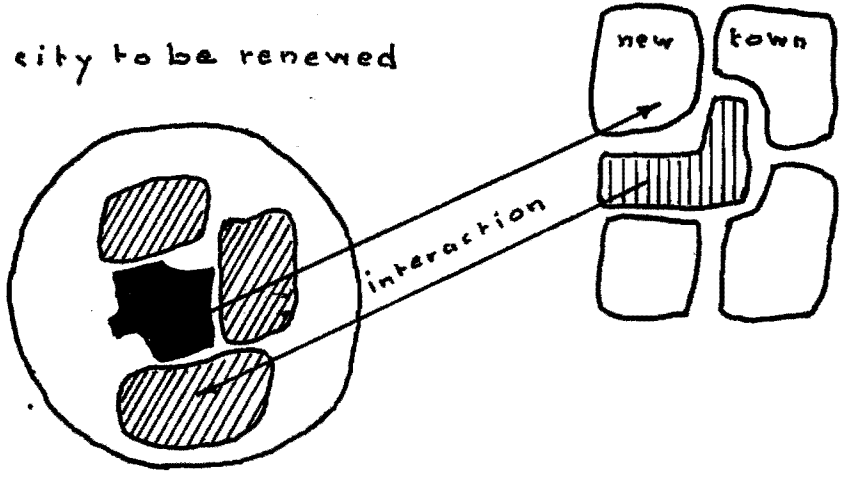
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ECONOMIC DIMENSIONS
OF URBAN RENEWAL



Economic dimensions of urban renewal*

- 1 introduction
- 2 Adam an Example
- 3 price developments
- 4 problems of choice
- 5 right seeing Barlage

* Paper of the course, Amsterdam, February, 1981
Sector of Building Economics
• University of Amsterdam
• Delft University of Technology
• Eindhoven University of Technology

1 INTRODUCTION

The process of expansion and renewal of the building stock over time needs our attention when we are thinking about economic dimensions of urban renewal.

Urban renewal as a goal is directed towards the functioning of the city and its components. The decision to undertake the renewal is governed by the requirements imposed on the city and parts of the built environment concerned.

Urban renewal is, nevertheless, realized with the aid of building processes. Therefore, as a start, we will pay attention to informations on building stock and building production. The changing relation between building stock (built environment) and building production is a phenomenon which shows a gradual development. This phenomenon derives its existence from the transition of increasing growth to decreasing growth of the building stock. In the chapter on the development of stock we will look at the general consequences generated by the ways in which stocks increase on the development of net production. To obtain a building production aiming at maximum stability forces are working in order to stimulate gross building production after a period of high rise in net building production. These forces demand our special attention for the manners in which urban renewal is being realized.

Expansion of the building stock and urban renewal are two components of building production. They cannot be treated seperatedly without damaging the organic structure of the built environment.

In the chapter on the building task in the Netherlands an actual analysis is given on the Dutch situation in order to acquire a practical insight in problems arising from the changing relation between building stock and building production.

It will become clear that in developed countries a situation could occur, or has already been reached, wherein building activities on behalf of urban renewal comprise a substantial part of total building production. Economic problems which arise in such a situation are exposed on the fifth chapter.

In order to obtain a deeper insight into the relationship between urban expansion and urban renewal, both regarding the building stock, on the one side and the building process on the other, a distinction has been made between four groups of functions:

- 1 the concentration functions
- 2 the use functions
- 3 the construction functions
- 4 the process functions.

The information furnished in all chapters - in addition to other informations - forms a theoretical basis for a discussion on economic dimensions of urban renewal. Furthermore, informations on problems of urban renewal in Amsterdam will provide the practical basis.

2 INFORMATIONS ON BUILDING STOCK AND BUILDING PRODUCTION

In order to discuss generally the economic aspects of rehabilitation of buildings or the built environment as a whole there must be knowledge about some basic informations. These concern among other things the building stock, the position of building in the economic development in general and the changing relation between building stock and building production

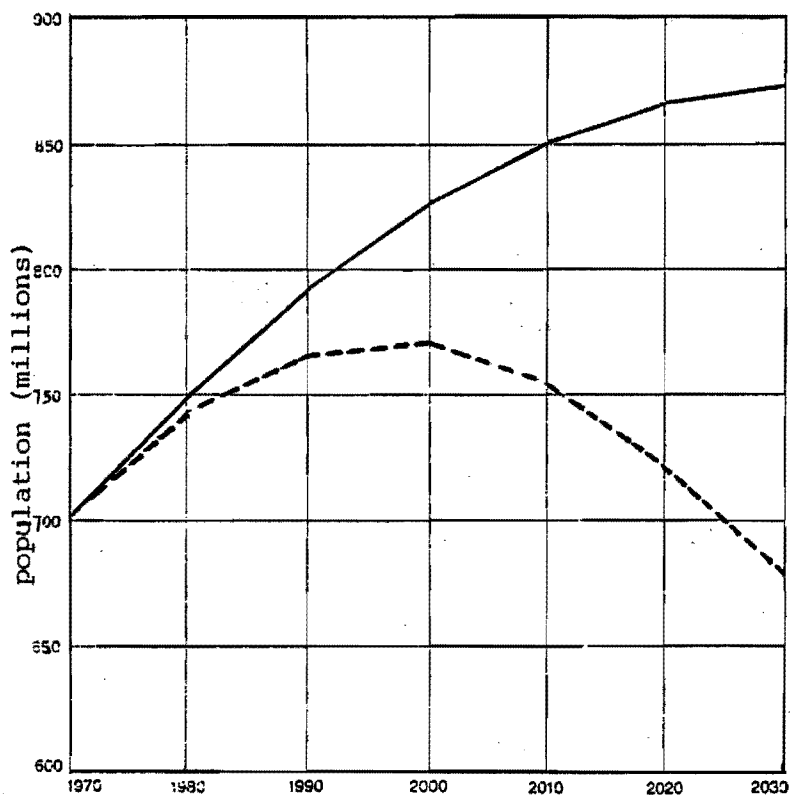
The size and composition of the building stock depend among other things on:

- . the size and composition of the population and their consequences on demand over time;
- . the size and composition of employment;
- . the need for infrastructural works.

The growth of the population and its changing composition have influenced the development of the building stock in this century in a unprecedented way. However an important change in the seventies can be seen as far as the development of population is concerned. The Council of Europe pointed out: 'After two centuries of unprecedented growth, the total population of Europe is approaching a standstill. In several countries, including Britain, Western Germany and Sweden, numbers are actually on the decline. What is the significance of this unexpected development ? Can we look forward to the prospect of a healthier environment and better housing and educated facilities or should we fear possible economic stagnation ?' (Population decline in Europe, London, 1978, cover-text). The picture on page 4 indicates the expectations for Europe.

The population development in the 20th century is accompanied by a remarkable phenomenon. This concerns the decrease of the average occupation density of dwellings. The average occupation density, which reflects the relationship between the size of population and the housing stock, is falling from approximately 5,0 in the

Population development in Europe
1970 - 2030



POPULATION WOULD DECLINE in Europe (including the entire U.S.S.R.) after the turn of the century according to one United Nations projection (---) made in 1975; the projection assumes that the total fertility rate would drop to 1.5, or about 25 percent below the replacement rate, by 1986 and remain at that level. Another UN projection (block) assumes constant fertility just below the replacement level, in which case the population would continue to grow, at a diminishing rate, through the period shown. Present trends favor lower projection.

(Scientific American, December 1978)

beginning of this century to circa 2,5 (or less) at the end. The building production and the building stock have been influenced by World War I and II. Besides, both population growth and decreasing occupation density are affecting the built environment during the 20th century in a way that requires full attention of all parties involved. The economic growth contributes essentially to this development.

The size and composition of employment are also susceptible to alterations as shown on page 6. The need for built facilities arises from population and its activities.

The need for infrastructural works depends among other things on urban form. (See: P.A. Stone, *The structure, size and costs of urban settlements*, Cambridge, 1973).

The position of building in economic development indicates the indispensable function of building stock in all human activities. Data on building production, concerning the period of large expansion during the fifties and sixties, show for a number of selected countries a different pattern at a different level of income. Expenditure on building production, expressed as a percentage of total gross national investment, is changing. The relationship between gross investment in fixed assets and expenditure on building production at various national income levels can be approximated by a curve, which will be shaped as shown on page 7. Where national income per capita is low, expenditure on such production will be between 65 and 70 percent of the total sum invested in fixed assets, but will drop with the rise in national income. In addition to that, the share of gross investments in fixed assets in total gross national expenditure itself is higher at higher levels of prosperity.

A rise in the standard of living is accompanied by changes in economic structure. Industry and transport vie with the building production for investment funds with the result that although building production rises, its share in total gross investment in fixed assets drops. Here a factor of importance may be that the large investment share demands control of total expenditure and

Changes in employment

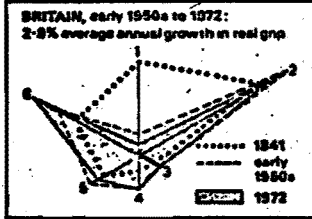
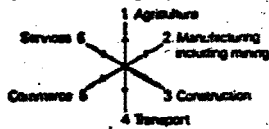
Melting snowflakes

An ample reserve of underutilised labour is one of the basic ingredients for fast growth. A large and backward agricultural sector is the best source for it.

When the labour force in manufacturing is expanding rapidly, additional investment is required to expand the capital stock to support the extra workers. The share of investment in gnp tends to

Shrinking waste lines

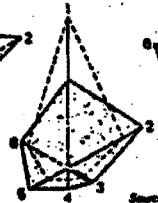
Key: share of working population in-



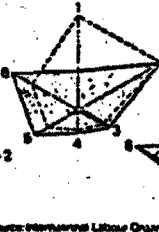
JAPAN : 10.0%



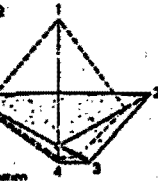
SPAIN : 6.1%



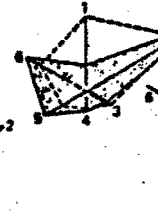
FRANCE : 5.6%



ITALY : 5.3%



GERMANY : 6.0%



UNITED STATES : 3.6%



Source: International Labour Organisation

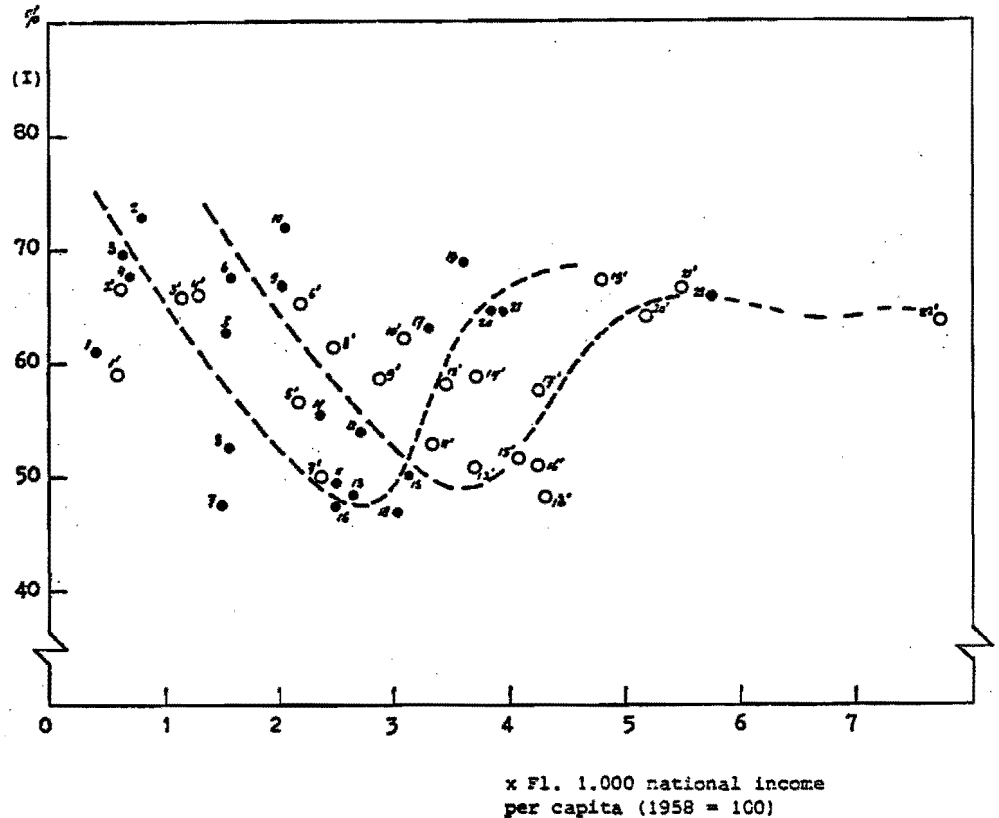
be high. As a result, the capital stock is on average younger than in countries which are doing little more than replacing an existing stock. It therefore embodies newer technology which enhances productivity. Differences in productivity growth, rather than differences in the rate of wage inflation, have explained different rates of price inflation between countries in the postwar years. Fast growing economies are more competitive and so can secure the export orders upon which their fast growth depends. Fast growth also provides the resources for high investment and exports without there being any need for severe restraint on the growth in personal living standards. This is the virtuous cycle which countries like Japan and Italy and France enjoyed during the great boom. Germany had a smaller agricultural sector, but imported immigrant workers for its manufacturing industry.

Snowflake diagrams illustrate the link between fast growth and ample reserves of labour in agriculture. The share of employment in each major sector of an economy is plotted along different axes. Immature economies have rounded snowflakes, but as an economy matures its snowflakes become star-shaped. First the manufacturing sector pushes out, and then the service sector, while the agricultural spur, which supplies the

labour to these sectors, gets smaller. The more star-shaped a country's snowflake was as it entered the period of post-war growth, the slower its growth in the boom. Japan started with more scope for growth in 1954 than Britain enjoyed in 1841. By 1951 Britain was already a more mature economy than France is today. Since then the major expansion in Britain has been in the service sectors, where productivity growth is less easily measured.

In the freezing slump, mature economies may have the advantage. Potential for high productivity growth has to be exploited if the level of income in the backward agricultural sector is to be brought up towards the level of income in industry. In boom times large income differences can be neglected so long as everybody is rapidly becoming better off. But when expectations of improving living standards have been aroused by fast growth there is trouble because the momentum is not being sustained. France, for example, must notch up 5 per cent a year growth to keep unemployment from rising. With demand stagnant and the return on investment depressed, this becomes more and more difficult. As a result, social tensions are liable to increase. France's riots in May, 1968, followed a period of stagnation.

Building production as a percentage of gross investment in fixed assets and national income per capita in selected countries (D.Fl.)
 (average ● 1953, 1955, 1956 and ○ 1963, 1964, 1965)



- | | | |
|------------|------------------|--------------------------------|
| 1 Zambia | 9 Czechoslovakia | 16 Western Germany |
| 2 Turkey | 10 Israel | 17 Australia |
| 3 Portugal | 11 Netherlands | 18 Norway |
| 4 Greece | 12 France | 19 Switzerland |
| 5 Ireland | 13 Denmark | 20 Canada |
| 6 Finland | 14 Belgium | 21 Sweden |
| 7 Austria | 15 Great Britain | 22 United States
of America |
| 8 Italy | | |

(See i.a.: W. Paul Strassman, The construction sector in economic development. Scottish Journal of Political Economy, vol. 17, 1970)

one of the ways in which such control is often exercised is in 'regulating' building production.

Resulting from the high level of investment, the economies of most of the countries concerned are generally fairly expansive. As the level of prosperity continues to climb, the percentage share of building production in gross investments in fixed assets tends to increase again as well to a certain level.

This relative increase in building production can stem from three causes:

- (a) If the expansion process slows down, overall investment will drop and as a result the relative importance of building production increases, as investment in machinery will be most affected.
- (b) Irrespective of the speed in which the expansion takes place, in times of increased prosperity a larger share of gross expenditure can be directed towards building production. A drop in the average occupation density and a higher level of living comfort can be achieved under these conditions and will lead to a rise in the volume of building production.
- (c) The low rise of productivity in the building process will also have the effect of forcing building costs and prices upwards at a rate in excess of that of the general price index. Together with the rise in production volume, the price rise will lead to a rise in building production in terms of money, both relative and absolute.

The relative and absolute increases in building costs constitute a problem which demands attention. It also has consequences for urban renewal.

Figures on gross fixed capital formation in construction in several countries, during the expansion period of the fifties and the sixties, are also given on page 9.

The changing relation between building production and building stock has been shown in the figure on page 11.

The figure on page 12 gives a hypothetical development of this relation on the assumption that the political end is continuity of the production volume.

In this century the development of the building stock has altered strikingly the physical fabric of almost all countries. This has been influenced by many factors. Especially in the fifties and

Gross fixed capital formation in housing and in construction
in Western European Countries, 1956 to 1966
(based on current market prices)

A = Gross fixed capital formation in housing as a percentage of gross national product
B = Gross fixed capital formation in housing as a percentage of total gross fixed capital formation
C = Gross fixed capital formation in housing as a percentage of gross fixed capital formation in construction
D = Gross fixed capital formation in construction as a percentage of total gross fixed capital formation

Country	Code	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Austria	A	4.1	4.1	4.3	4.2	4.3	4.4	4.4	4.4	4.4	4.7	4.7
	B	19.4	18.7	19.8	18.6	18.1	17.8	17.9	17.9	17.8	18.2	18.2
	C	39.3	39.2	41.4	38.6	38.6	38.0	37.6	36.4	35.3	35.3	35.3
	D	49.7	47.3	47.8	48.2	48.2	48.8	47.8	46.3	46.3	46.3	46.3
Belgium	A	4.4	4.7	4.3	4.6	5.1	5.3	4.5	4.0	3.8	5.7	...
	B	24.4	26.9	26.2	26.3	27.5	27.0	22.4	20.6	27.4	27.6	...
	C	44.3	47.5	46.8	45.1	47.9	46.9	40.1	36.8	45.3	46.2	...
	D	57.7	54.3	56.2	56.3	57.7	57.4	51.9	48.0	60.3	58.7	...
Denmark	A	2.7	3.1	2.7	3.2	3.2	3.6	3.7	3.5	4.2	4.5	4.4
	B	16.5	18.1	15.6	17.0	16.5	17.6	17.7	17.5	18.9	20.6	20.1
	C	34.7	38.1	34.7	38.2	35.9	36.5	37.3	35.9	37.5	39.3	38.7
	D	47.4	52.3	48.0	52.7	48.0	48.5	47.3	48.7	50.4	52.9	51.7
Finland	A	3.6	3.9	4.9	4.8	5.2	5.7	6.3	6.3	5.3	3.5	3.5
	B	21.6	24.4	19.4	18.8	19.0	20.4	22.8	24.4	20.5	21.8	22.7
	C	33.1	35.3	29.0	29.5	32.1	34.5	38.5	38.4	33.6	31.9	32.2
	D	45.3	49.7	37.9	37.9	41.3	39.7	43.3	43.3	36.4	34.3	34.7
France*	A	4.3	4.7	5.0	5.0	4.7	4.8	4.8	5.2	6.2	6.7	...
	B	24.0	24.3	25.8	26.2	25.3	24.5	24.5	25.6	29.0	30.7	...
	C	44.7	45.3	46.5	46.4	46.2	45.1	44.3	46.0	49.7	50.8	...
	D	57.7	57.7	57.7	56.4	56.8	56.3	55.3	57.7	57.7	56.0	...
Greece*	A	5.8	5.0	6.3	5.7	5.6	5.7	5.9	6.0	6.8	...	...
	B	37.2	33.5	31.9	26.3	21.0	24.3	27.1	31.7	30.9	...	...
	C	55.7	50.5	51.3	44.1	39.3	41.2	42.2	45.0	47.4	...	...
	D	64.9	64.3	62.2	56.4	50.9	52.9	52.3	54.9	54.3	...	...
Ireland	A	1.6	2.3	2.0	2.1	2.3	2.3	2.6	2.9	3.5	...	...
	B	21.5	17.7	14.6	15.5	16.6	15.2	15.4	16.1	18.8	...	...
	C	34.1	39.2	27.4	27.9	30.1	28.9	28.4	29.5	32.0	...	...
	D	46.0	52.3	32.3	33.2	35.1	32.6	32.3	32.6	34.6	...	...
Italy	A	3.8	4.4	6.1	6.2	6.0	6.1	6.7	7.2	7.7	6.8	6.2
	B	27.2	29.6	29.9	29.8	27.0	26.6	28.8	30.2	35.4	35.8	33.8
	C	48.7	54.2	51.2	51.0	48.9	49.3	51.7	54.2	56.1	54.5	52.9
	D	58.9	64.6	58.9	58.9	56.8	56.8	58.7	61.7	64.7	64.5	61.9
Malta	A	2.7	3.7	3.3	4.6	4.3	4.1	4.4	4.8	3.4	3.3	2.3
	B	14.9	18.0	15.0	21.7	21.6	22.9	23.5	22.1	15.9	15.5	10.9
	C	22.4	26.7	25.4	37.3	31.9	36.7	38.3	35.7	32.7	32.4	23.9
	D	28.1	33.9	32.4	47.3	41.3	46.9	47.7	45.9	42.1	42.4	31.9
Netherlands	A	4.6	5.2	4.9	4.7	4.2	4.1	3.9	3.8	4.3	4.9	5.0
	B	18.6	20.2	21.9	20.4	17.9	16.9	16.1	16.3	18.2	19.8	19.9
	C	32.5	41.9	41.5	39.3	36.5	34.7	33.2	32.6	33.7	34.3	33.3
	D	42.1	52.3	52.3	47.8	44.0	42.7	42.3	42.0	42.0	42.0	42.0
Norway	A	4.1	4.6	4.4	4.3	4.2	4.4	4.4	4.2	4.0	4.0	...
	B	14.5	15.8	13.7	14.5	14.7	14.7	14.7	13.9	13.7	13.6	...
	C	31.5	33.4	31.1	30.8	30.4	31.5	30.1	28.5	27.8	27.9	...
	D	46.3	53.3	48.7	47.7	46.4	46.7	46.8	46.7	47.3	46.7	...
Portugal	A	3.1	2.9	3.1	3.2	2.9	3.1	3.0	3.3	3.5	3.6	...
	B	21.7	19.9	19.6	19.8	16.7	17.8	18.0	18.4	20.3	22.2	...
	C	31.9	28.8	29.1	30.1	28.7	29.4	28.4	27.5	31.1	33.2	...
	D	42.4	40.7	42.9	42.9	42.9	42.9	42.9	42.9	42.9	42.9	...
Sweden	A	3.2	3.1	3.3	3.3	3.1	3.2	3.4	3.6	3.9	3.8	3.3
	B	26.3	25.9	25.6	24.4	23.0	23.0	23.9	24.2	25.3	24.7	23.3
	C	40.1	39.7	39.2	37.1	35.8	36.3	37.6	36.9	37.9	37.1	35.5
	D	47.8	48.8	48.3	45.9	44.3	43.7	43.1	43.6	44.8	44.8	43.8
Switzerland	A	3.4	4.8	3.9	5.6	6.9	7.5	7.1	7.1	7.7	7.3	...
	B	26.4	22.5	19.9	26.1	29.7	28.6	25.8	26.9	26.1	26.4	...
	C	38.7	33.9	30.8	38.7	44.3	43.2	39.9	37.7	38.2	39.2	...
	D	48.2	42.9	38.3	48.9	53.9	52.3	49.3	46.0	47.3	47.3	...
United Kingdom	A	3.0	2.8	2.5	2.7	2.9	3.0	3.1	3.1	3.7	3.6	3.5
	B	20.4	18.2	16.8	17.7	18.2	18.0	18.9	19.3	20.8	20.6	19.8
	C	41.8	39.1	36.4	37.7	38.3	37.2	36.9	38.1	39.7	39.2	39.6
	D	58.8	56.3	56.2	56.9	57.1	56.9	56.2	56.7	57.4	57.6	56.0
Western Germany*	A	3.0	4.8	4.8	5.4	5.3	5.5	5.6	5.6	5.9	5.7	...
	B	22.2	22.5	22.0	23.2	22.3	22.1	21.9	22.3	22.3	21.3	...
	C	46.3	46.0	44.8	45.6	44.9	44.5	43.4	43.0	42.3	42.0	...
	D	57.7	57.8	57.3	57.9	57.7	57.7	57.5	57.5	57.7	57.7	...
United States	A	3.2	4.7	4.9	5.5	4.7	4.6	4.7	4.7	4.4	4.2	3.6
	B	28.8	26.5	29.0	31.4	27.9	28.1	28.6	28.1	26.5	24.3	20.9
	C	43.9	41.2	42.9	47.0	43.1	42.2	41.7	41.2	41.9	39.0	35.6
	D	55.3	52.7	51.8	51.8	50.7	49.7	49.3	49.3	49.3	48.3	47.3

Source: Annual Balance of Housing and Building Statistics for Europe, 1966 (United Nations publication, Sales No.: 67.12.3.1); for Western Germany, figures supplied by the Government.
* Starting 1956, new revised series.

* Illustrated 1960, the data supplied by the Federal Republic of Germany refer to its territory and also to West Berlin, for which separate figures are not available. Prior to 1960, illustrate the Saar.

the sixties, the alterations in the building stock changed dramatically the appearance of the built environment in the developed countries.

To get some insight in the changing relation between building production and building stock an outline may be given of their development over time. This can be done on the ground of data of production and stock. Their base has to be found in numbers on housing production and housing stock. Some information concerning the relation between housing and other building sectors may be found in figures concerning gross fixed capital formation in housing and in construction (see page 9).

The figure on page 11 has been drawn by means of available figures and on account of assumptions. The result - that is open to criticism - is characteristic for developed European countries.

The development in the second half of this century is most spectacular. However the combined effect of different developments in the first half has considerable contributed in an important way to the actual result. The thinking on building and built environment has received in 1928 an important impulse by the CIAM. The program of the Congress said among other things:

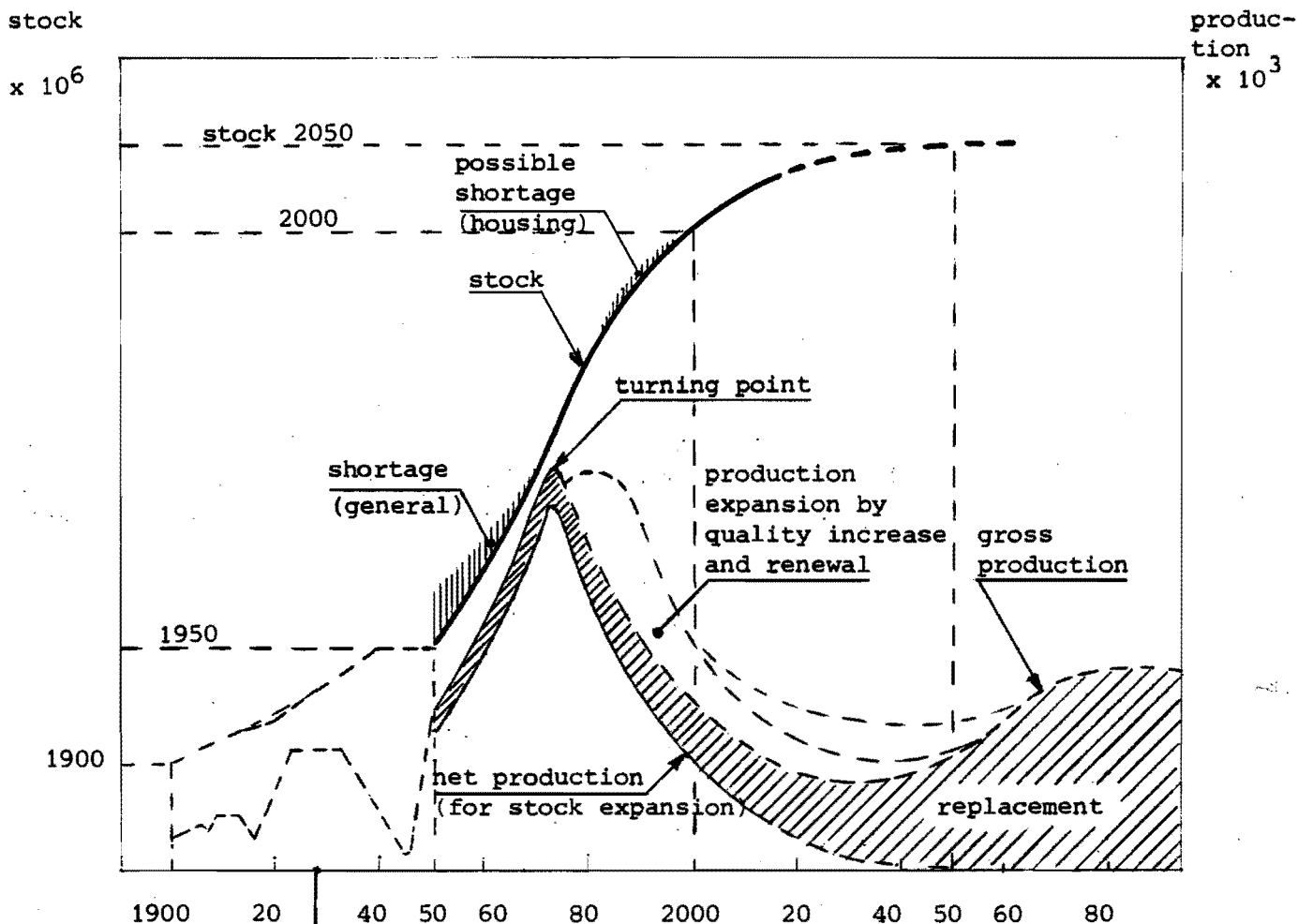
'Le Congrès a pour mission de porter l'architecture sur son plan véritable qui est le plan social et le plan économique.

'Le Congrès de la Sarraz dans son trois journées de travail, se propose d'énoncer les tâches de prochaines réunions qui grouperont des éléments prépondérants de l'architecture, de l'entreprise et des organisations sociales et économiques.

'Les questions qui peuvent légitimer la rencontre de spécialistes de de tous pays, sont celles qui entraînent l'examen de conditions introduites par la technique moderne dans les domaines de la répartition du travail, de la rationalisation, des réglementations municipales, de l'éducation et du rôle des Etats.

These quotations sound nowadays strikingly actual. But the coming building task, the political, economic and technological conditions have changed in fifty years in a considerable way. It is necessary to get insight in this task also on behalf of understanding the economic questions arising from the conservation of buildings and the built environment.

Development of building stock and production (numbers) causing a turning point in production



Juin 1928
 Congrès international d'architecture moderne
 de la Sarraz
 le Congrès avait pour mission de porter l'architecture sur son
 plan véritable qui est le plan social et le plan économique

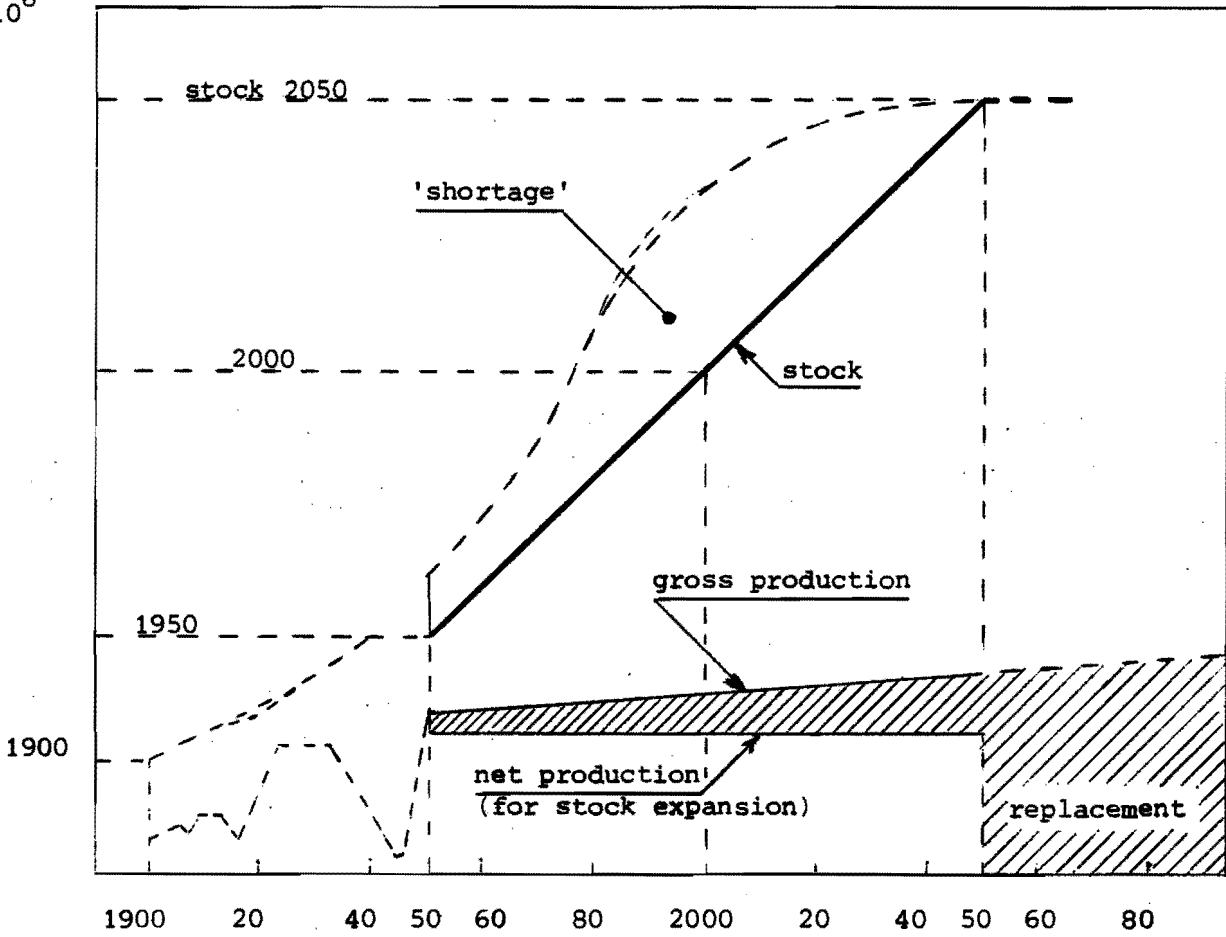
Case 1

1972/73: addition to stock + 3 %

Development of building stock and production (numbers)
 avoiding a turning point in (gross) production

stock
 x 10⁶

production
 x 10³



Case 2

1972/73: addition to stock $\pm 1,5 \%$

Controlling environment

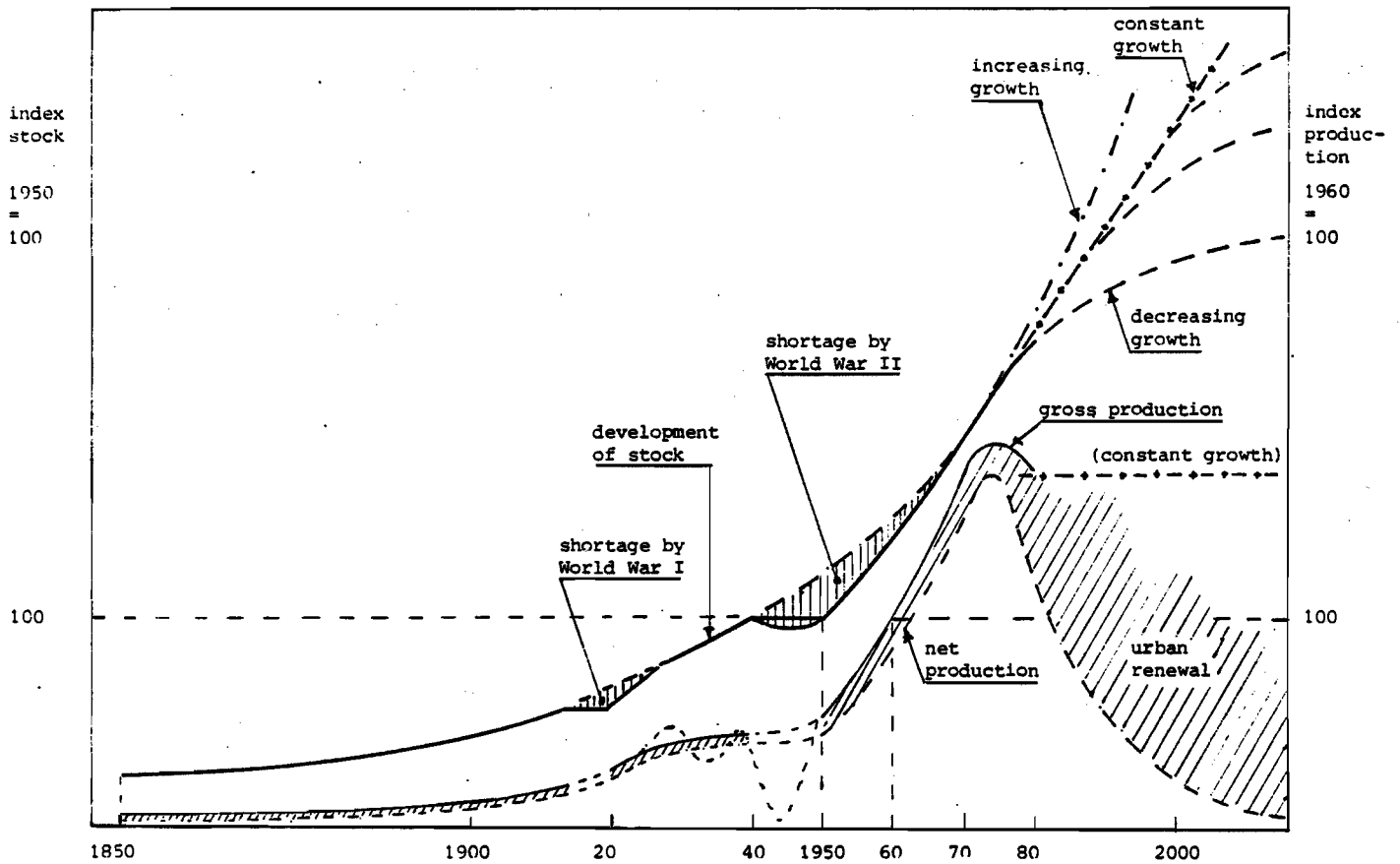
- 1910 Het plan in 1910 Alden took a century for implementation
- 1923 CIMA started in 1928 large follow up
It will have to take a long period.
It places new in all kinds
The verloop is te denken in de tijd
- 1964 to CIB congress which influence built environment
- 1974 Urban crisis

Development of shock gives problems
die affect zijn van stadsvernieuwing

Thinking about conservation and renewal it is useful to review the changing relation between building stock (built environment) and building production from the past century to the next century as outlined below.

Special attention should be paid to the periods in which changes appear in the slope of the curve indicating the development of building stock.

CHANGING RELATION BETWEEN BUILDING STOCK (BUILT ENVIRONMENT) AND BUILDING PRODUCTION



3 THE DEVELOPMENT OF STOCK

After the sharp growth in production in many sectors during the fifties and sixties a reversal occurred in a number of fields at the start of the seventies. Viewed as a whole, this was already noticeable at the end of 1972. The increase in growth slowed down, making way in various cases for a decline. On the basis of the extrapolation of developments in the two preceding decades, this decline was unexpected. For that matter, any expression of expectations about a coming decline in production encounters opposition. The reason for this is that companies will gear themselves to the predicted decline and thus - though not intentionally - will make the expressed expectation a reality. A self-fulfilling prophecy then comes true.

In opposition to this view it can be said that the timely announcement of a decline in production is a precondition for mobilising all the potential forces and possibilities in order - if desired - to prevent a decline and/or to prepare measures to deal with and, if necessary, limit the consequences of this.

The reversal in 1972 - which really only became clearly visible in 1974 - came as a surprise to many people. This raises the question of whether a turning point in production cannot be observed in advance on the basis of available information and acceptable assumptions.

The economic development which started in the seventies is accompanied by increasing unemployment and inflation. While inflation in general is clearly tending to decrease, the development of the employment situation offers less favourable prospects.

It is apparent that an unequivocal answer to the question of how economic growth will develop in the future is still far from being given.

If in 1978 we find an increasing rather than a decreasing pessimism on the part of Dutch consumers about the development of the economic situation, particularly with regard to unemployment, the OECD, in its report published in July of that year, predicts a growth of 3.5 % for 1978 in the average gross national product of the 24 member countries - a percentage which is almost the same as the growth in 1977.

Growth in the gross national product does not mean a growth in every sector of production. Growth, stability and decline in the volume of production occur simultaneously in the various sectors and, viewed in terms of time, divergent developments are to be expected. It is a topical question whether the growth in production - particularly in the stagnating sectors - will be able to recover. Recovery in this case is regarded as being a renewed increase in the annual production measured in terms of volume, although this may proceed at a slower pace than was achieved in the sixties. In order to find an answer to this question we shall consider the development of the gross production in two different ways, namely (D) and (E) during the period t_0-t_1 (see Fig. 1). In the most strongly growing production the initial level is significantly lower than in the other case; it reaches a higher level and, at an earlier moment in time, a turning point. All this also depends on the available production capacity, the possibilities for sales and the changes occurring in both.

At the time t_1 it is a question of whether (D) and (E) can obtain insight into the future course of events. The information contained in the course of the production in the period t_0-t_1 offers little to go on for this.

The observation of production for the purpose of recognising developments in the national economy normally concentrates on the size of the flow produced during a particular period, generally a year. This observation does not relate to the stocks of all the finished products which are present at a particular time in the enterprises and consumers' households. Nevertheless, the development of this stock has a great influence on the course of the relevant production.

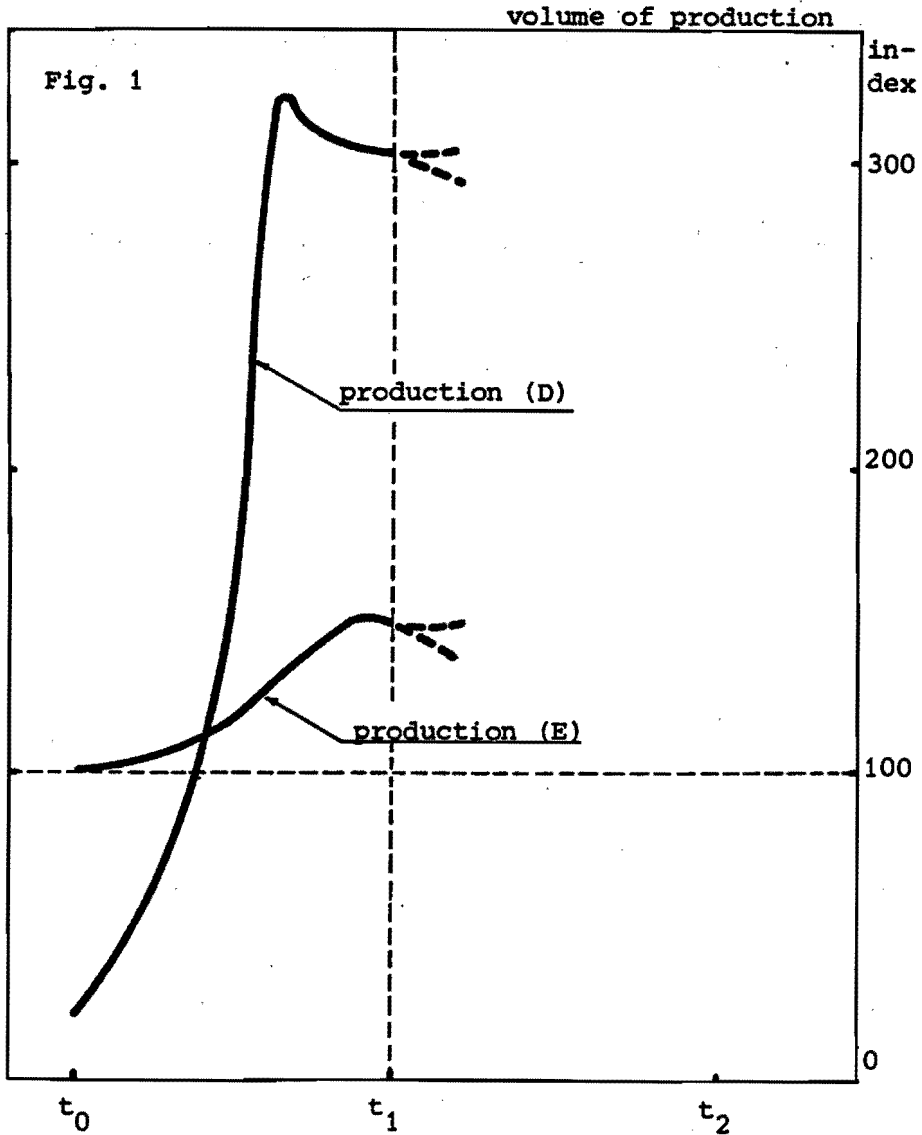
Depending on the development, rising sales can display a decrease after an initially sharp increase but may continue rising. If such a development occurs in the formation of a stock, then it has a radical influence on the production aimed at the expansion of the stock.

Fig. 2 illustrates five methods of stock development which, starting at the same level in t_0 , all lead to a similar result at the point of time t_2 . In these cases, the net production aimed at expansion shows a very varied trend, as shown in Figs. 3a and b.

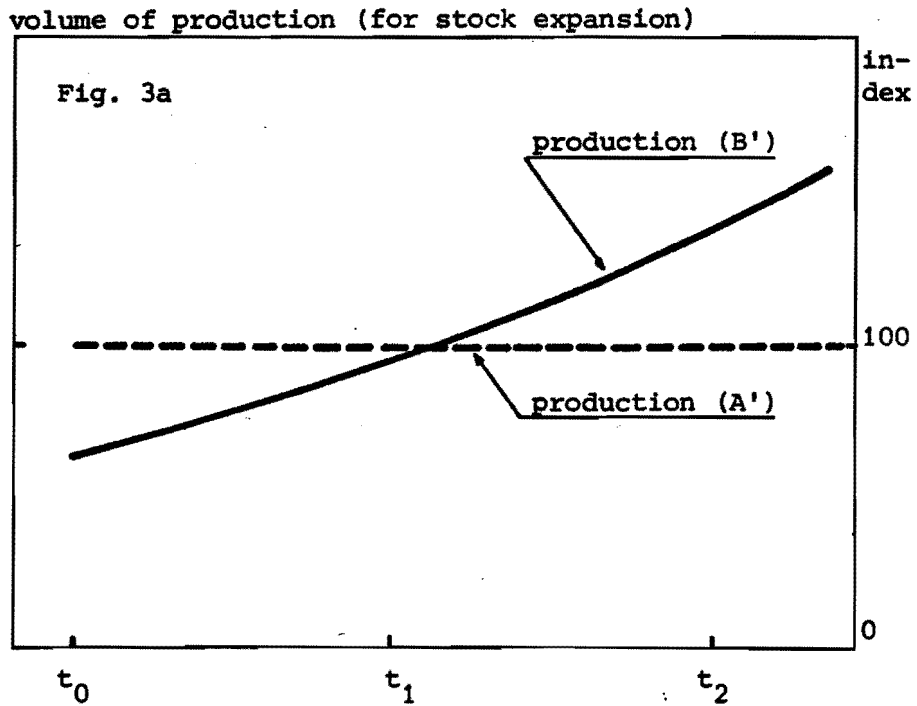
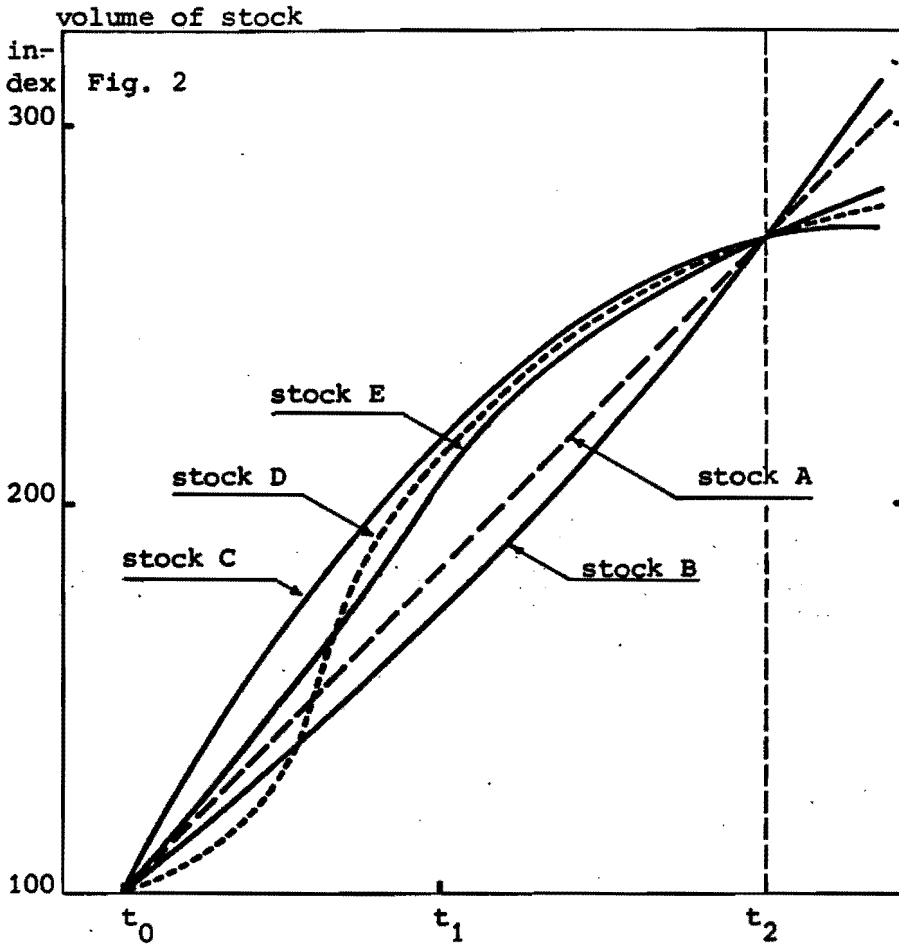
The below figure illustrates two different ways in which the volume of the gross production can develop during a period of expansion, partly depending on the available production capacity and the possibilities for sales.

The gross production comprises the production aimed at both expansion and replacement.

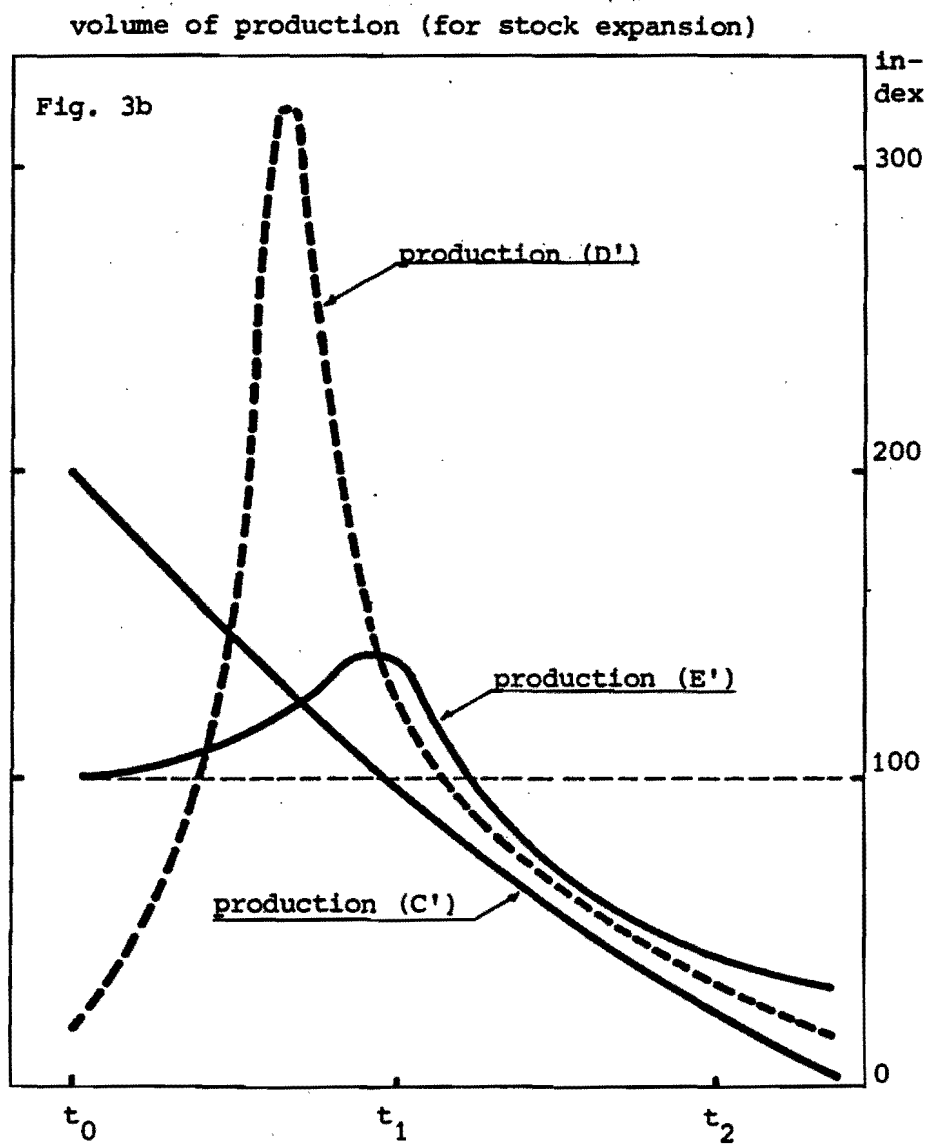
Development of the volume of the gross production (expansion + replacement)



Increasing stocks - A to E - with unchanging (A'), increasing (B'), decreasing (C') and increasing and decreasing production (D' and E')



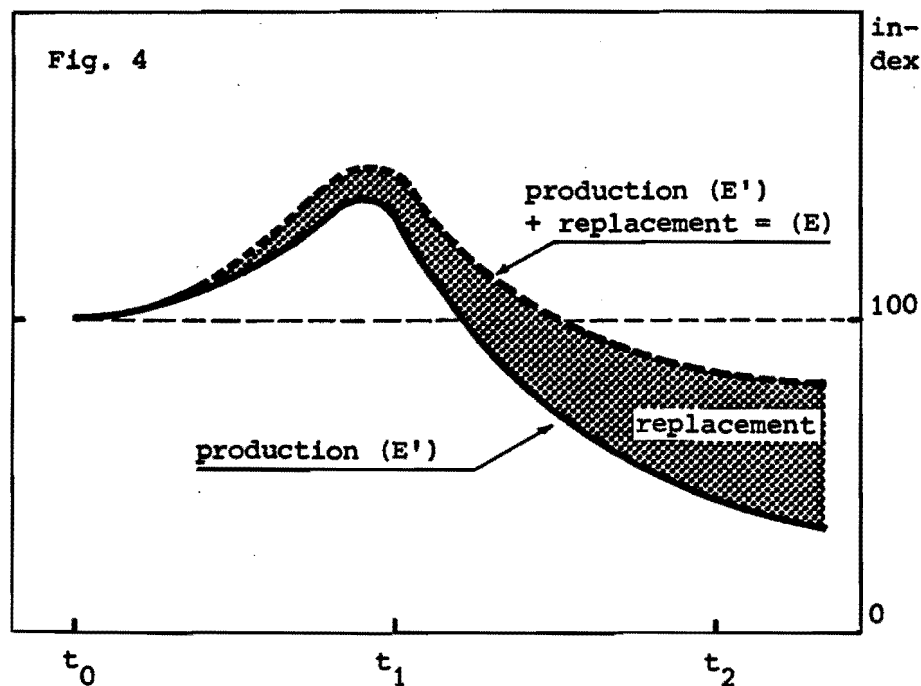
The volume of the production aimed at stock expansion - as shown in Figs. 3a and 3b - is derived from the line which describes the stock development.



In the figure below one trend of the growth production of (E) is drawn as an example - see p.16 - comprising the net production (E') plus the associated replacement and maintenance. This replacement can increase or decrease, depending on the rate of turnover of the product. The higher the rate of turnover, the greater the possibility of maintaining the volume of production at a particular level. (The question of whether an increase or a decrease in the rate of turnover is or is not possible and/or desirable, will have to be assessed from case to case and can be disregarded here).

Development of the volume of the gross production (E)

volume of production (for expansion and replacement)



It proves that stable and increasing net production can only be expected when there is a proportional or more than proportional increase in the stock. This is a development which does not apply to a number of sectors. When the growth in the stock is decreasing, in cases D and E the net production (D') and (E') shows a definite turning point (Fig. 3b) that agrees with the trend of the gross production (D) and (E) given in Fig. 1.

It may be assumed that in a large number of sectors a development has taken place which corresponds to those which are limited by the growth in the stocks D and E. In this sector a sharp growth in production has taken place in the case of D during a certain period. While the growth in the stock continues after the turning point, the net production declines. The drop can be compensated for by increasing the production aimed at replacement (and maintenance), as shown for E in Fig. 4. The replacement production depends on the rate of stock turnover. This displays very great differences from sector to sector and, within the sectors, is subject to considerable scatter in a number of cases.

In the period t_0-t_1 the growth in production was accompanied by a considerable expansion in the production capacity and by a constant call on the labour market. Period t_1-t_2 offers a completely different perspective to the sectors concerned owing, among other things, to the disappearance of the pressure to expand.

By virtue of the foregoing, a sector-by-sector survey will be required in order to answer the question relating to the recovery of growth in the stagnating sectors, having regard, among other things, to the nature of the product. The rate of turnover of the product is of particular importance in this respect. From the foregoing discussion it can be seen that if allowance must be made for stock formation and the turning point in the production aimed at expanding the stocks has been reached, the maintenance of the production level imposes special demands.

As we have seen, continuity in the growth of the stock does not mean continuity in the growth of production or maintenance of the production level achieved. Nevertheless, in many cases a continuous and increasing or a continuous, stable production is regarded as an ideal development. Fluctuations in the volume of production here are

considered to be deviations in the business cycle.

One type of production in particular which is geared to stock formation is building production. This has the reputation of being unstable. At the same time, there is a prevailing view that it is necessary to stabilize building production and that it is possible to achieve this.

At the start of the fifties, Colean and Newcomb tested assumptions relating to the influencing of building production and recorded the results in an interesting book. The assumptions concerned the following aims:

- a. 'to vary the volume of construction in a contra-cyclical manner so that it might serve as a major stabilizing force in the general economic or
- b. to maintain an even volume of construction throughout all phases of the so-called business cycle and thus at least neutralize construction activity as a major disrupting force in the economy'.

(M.L. Colean - R. Newcomb, *Stabilizing construction: The record and potential*, New York - London, 1952, p. XVII).

Research leads to the conclusion that it is desirable to stabilize the volume of building production and to do this in such a way as to promote a regular growth in the production level. This conclusion is characteristic of the views which can be observed with regard to building production. Views, however, which have been unable to influence building production.

In a following survey we shall examine, among other things, the state of developments for achieving and/or maintaining the continuity of building production in the Netherlands.

4 THE BUILDING TASK IN THE NETHERLANDS

The theme chosen by the Department of Construction of Eindhoven University of Technology for the symposium held on the occasion of its tenth anniversary in December 1977 was adaptability.

The next question asked in this respect was: does the building world react too slowly to internal and external developments ?

The department indicated the approach to be adopted to the subject as follows: Because of our failure to think dynamically about long-term developments, building activity continues to be an ad hoc response to an ad hoc task. This discontinuity is strengthened by the tendency of the government to use the building industry as a means of achieving ends, other than those concerned directly with the building task, in the macro-economic field.

The subject to be dealt with will be explored below, albeit in a general way, under the title:

The building task between 1949 and 2009.

For reasons of clarity, a definition will be given of the term 'building world'. After all, it is essential to know who we are considering in our discussion. By building world we mean here the building industry and the policy-making authorities. (the latter are included in accordance with the thinking of the Construction Department of the Eindhoven Technical University). The building industry includes all the project initiating and implementing firms (including trade supply) as well as the relevant design and consultant organizations, both employer and employee, specifically involved in building production. The components of building production will be further investigated.

For this purpose, it is useful to distinguish two periods, namely:

- a. 1949 - 1972
- b. 1972 - 2009

The period 1949 - 1972

The building industry has been directly involved from the start in the policy formulation.

The government policy proposed in 1949: that an increase in production is necessary in the building industry in order to remove the backlog in various sectors, including housing construction. However the increase in the rate of construction should be held within limits, otherwise once the backlog had been removed and the demand for construction had reduced, there would be a permanent pool of unemployment.

It should be large enough, however, to meet the requirements of industrialisation. 1)

This statement of intent from the government included in the first report on industrialisation in the Netherlands, initiated a development in building production and the building industry or construction field which is now the subject of discussion. 2)

Looking at the growth in production, during the first period under consideration, the graph (p. 24) shows the following:

1. The total volume of building production including dwellings, industrial and government buildings and earthwork, hydraulic engineering works and roadworks from 1950 to 1972. The dwellings and buildings part of this production represented a substantial expansion of the superstructure. The engineering works contributed to the development and expansion of the infrastructure.
2. The volume of housing construction.
This category is presented separately since it has done and still does attract the most attention. If, in coming to conclusions regarding the reactions of the construction industry, we are considering building production, it is not right to limit ourselves to housing, let alone to fully subsidised housing, as is currently the practice in technical universities.

The trend lines of both volumes show a balanced increase with variations determined by changes in the annual production. It would appear that the variations are no more than "fuzz", in other words an unstructured interference. A striking feature, is the gradual growth which after 1963 suddenly becomes much stronger.

As far as we can establish, this development is the result of forces operating within the community. In this respect, demands have been made regarding the facilities in building projects especially in residential schemes.

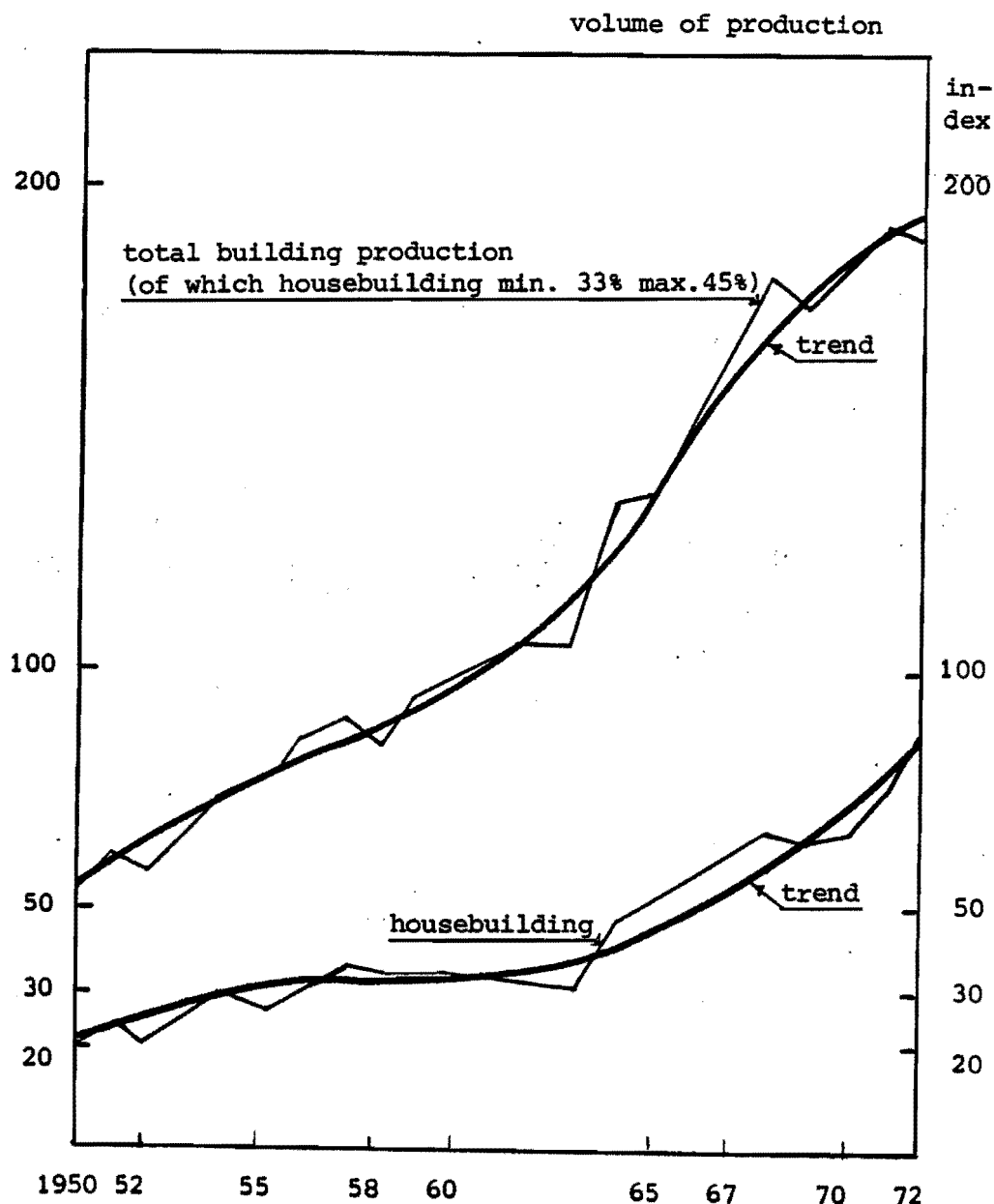
The pessimistic forecasts at that time regarding the feasibility of certain building capacities were not justified.

The "structural capacity deficit" 3) estimated by the government in the autumn of 1963 quickly became a thing of the past.

A lack of construction capacity was a phenomenon that, if it did appear, could be quickly overcome.

- 1) Report on industrialisation in the Netherlands. Reprint of Appendix IV of the supporting information relating to Chapter X (Economic affairs) of the 1950 national budget, September 1949, pages 44 and 45.
- 2) The 1950 Reconstruction Act made provision for the Building Programme in Article 15.
- 3) Letter from the Minister of Housing and Construction dated 3rd October, 1963; report concerning a multifaceted and expansive building policy, page 2.

Growth in the volume of total building production
(1960 = 100) and of householding since 1950.

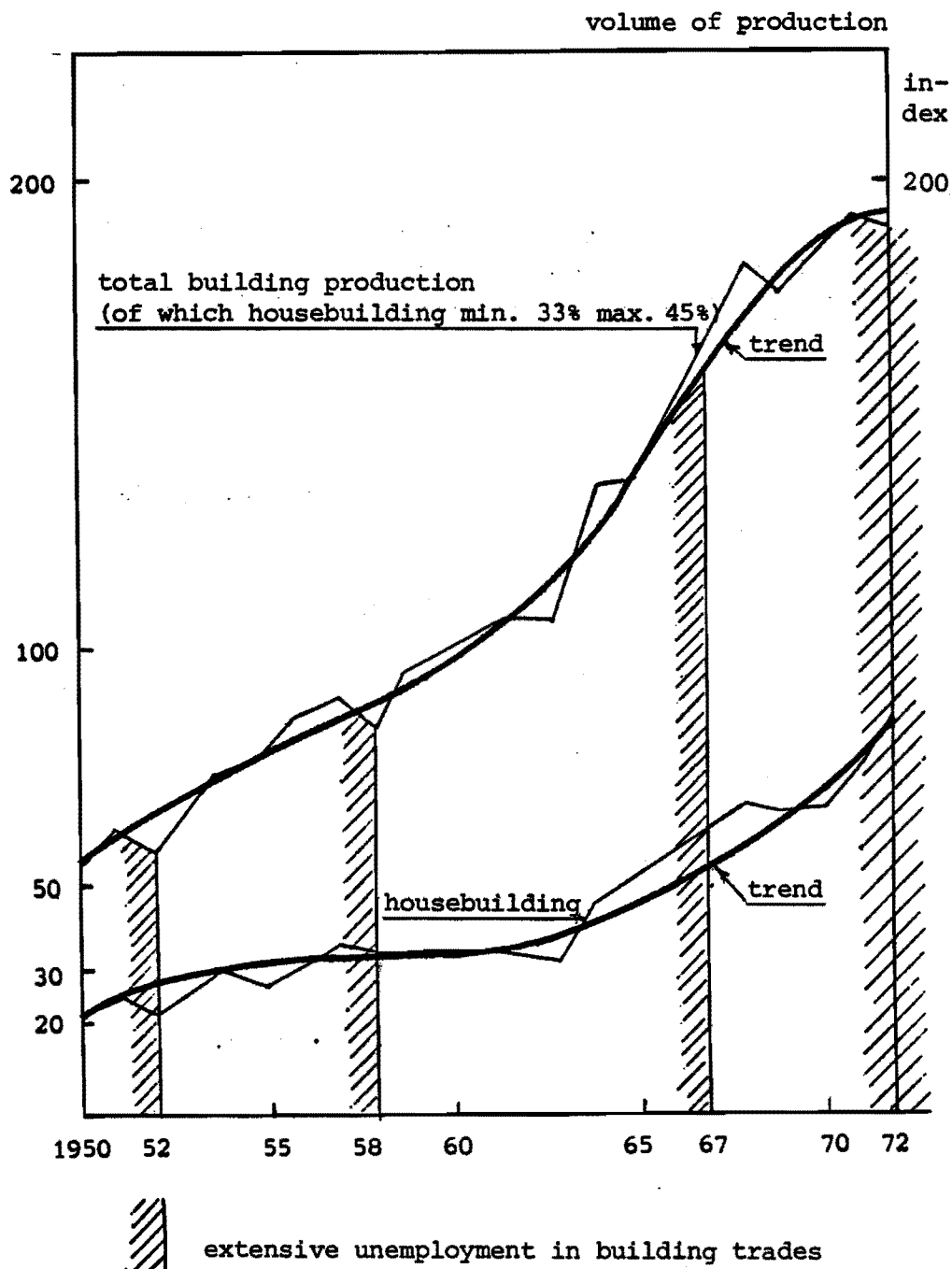


The construction capacity is determined by the raw material capacity, the labour capacity (manpower) which is available and the capacity of the design offices and the building firms. The last-mentioned covers matériel capacity and methodology including organizational capacity. Account should also be taken of the capacity of firms in the finishing trades and installation field. The growth in capacity accompanied the growth in demand for building production. In the sixties the capacity growth rate outpaced the increase in demand.

In the fifties there were certain periods when a proportion of the building capacity remained unused.

The under-utilisation of building capacity was manifested in unemployment among skilled building workers. As indicated in the following graph, this was especially the case in the years 1952, 1958, 1967 and 1972 (1973).

Growth in the volume of total building production (1960 = 100) and of housebuilding since 1950.



It is significant that accompanying the unemployment in 1952 and 1958 there is a reduction in the level of production. The unemployment in 1967 however is accompanied by a steep increase in the production level. In the same year, the department of construction at Eindhoven University of Technology was opened. Obviously, in the light of further development of the building production, the question arises as to what has motivated the policy-making government authorities to prepare and implement these measures for creating building capacity. I want to pass over possible answers to this question. If we look at unemployment occurring at a later date, then we see that in 1972 it is accompanied with stagnation in the growth of building production. The clearly emerging discontinuity in the utilisation of building capacity has especially affected the manpower sector. The unemployment of 1952 and 1958 was a result of factors not directly arising from construction, being respectively the Korean crisis and the spending restrictions caused by a deficit in the balance of payments. The restrictions, although of a short-term nature, which were then applied to the building production, indeed supported a macro-economic aim, as assumed at the start of this paper. The unemployment in 1967 displayed a structural characteristic that at the time was recognised only by a few. This unemployment was a result of the higher rate of increase of the building capacity, especially the manpower, than that of the existing and expected demand for building production. The firms reacted "quickly" to this situation by off-loading the excess capacity. The unemployment in 1972 accompanied the turning point in the growth of building production. At that time building industry did not recognise the turning point, even though its approach was indicated, especially in the case of housing construction. 4)

In addition to industrialisation, balance of payments and employment, prices control also forms part of macro-economic policy. In this connection, the government was constantly concerned over this period with the development of building prices and costs. Their level rose at a higher rate than general price levels, but this did not lead to a restriction of building production.

- 4) Pen stated the following in this connection. 'In the sixties, a Dutch economist predicted that around 1972 the building market would be saturated, with a resulting reduction in employment. Have Dutch politicians listened to this voice of scientific, and possibly barrier-breaking, prediction? No, not very well, considering Keerpunt (coalition agreement of the progressive three); because all that is promised there in housing is more, more, more extra dwellings every year. The disappointment is in proportion'.
J. Pen, Verlegde grenzen, in Hollands Maandblad no. 342, May, 1976, Page 6.

The increase in building costs was an issue for both the Marijnen cabinet and the Biesheuvel cabinet respectively in 1963 and in 1971. 5) A structural research project into the building industry was announced by the government on 3rd August 1971 with the aim of limiting further increases.

The opinion stated by the government in both years, that they expected to be able to limit the relative increase in building costs, did not take sufficient account of differences in technical structure which exist between different sectors of production.

Looking at the whole period 1949 - 1972, we generally conclude that the various constituents of the construction industry have each reacted to the developments of the building task in their own way, as quickly as possible, under the influence of the economic growth of this period. However the problem was to define and formulate the building task in relation to this growth. The recognition of this problem has always been problematic. 6)

In addition to economic growth, the following striking phenomena prior to 1972 relate to the construction industry:

- . transformation from reconstruction to physical planning (see the renaming of the relevant ministry)
- . extent of building production almost completely determined by the aim to expand the building stock
- . relatively increasing building costs
- . promotion of increasing scale
- . promotion of construction without skilled buildingworkers
- . development of specific techniques in addition to generic techniques
- . pressure for integration and specialisation
- . appearance of alternatives.

5) The building policy introduced at the end of 1963 had as its fourth plank; the halting of the disturbing rise in building costs. One of the aims of this policy, the encouragement of increasing building production, was not slowed down by the continuing rises in building costs.

6) When the government announced a basic change in policy in 1963, its motivation was disturbing as well as striking. Minister Bogaers stated the following in his introduction to the 'Report concerning a multi-faceted and expansive building policy?'

"Without exaggeration, the present situation in the building industry in general, and in particular concerning housing facilities, can be described as most alarming. This situation has not arisen suddenly in a short time, much rather can it be described as a gradual development, in steadily increasing tempo, to reach the current situation. It is difficult to recognise this process in the early stages. Then one would be right in asking why it had to come to this; was it not possible to take action sooner'.

Recognizing a trend in time is certainly one of the essential conditions which must be met, are we to achieve effective control of the extent and constitution of the building production.

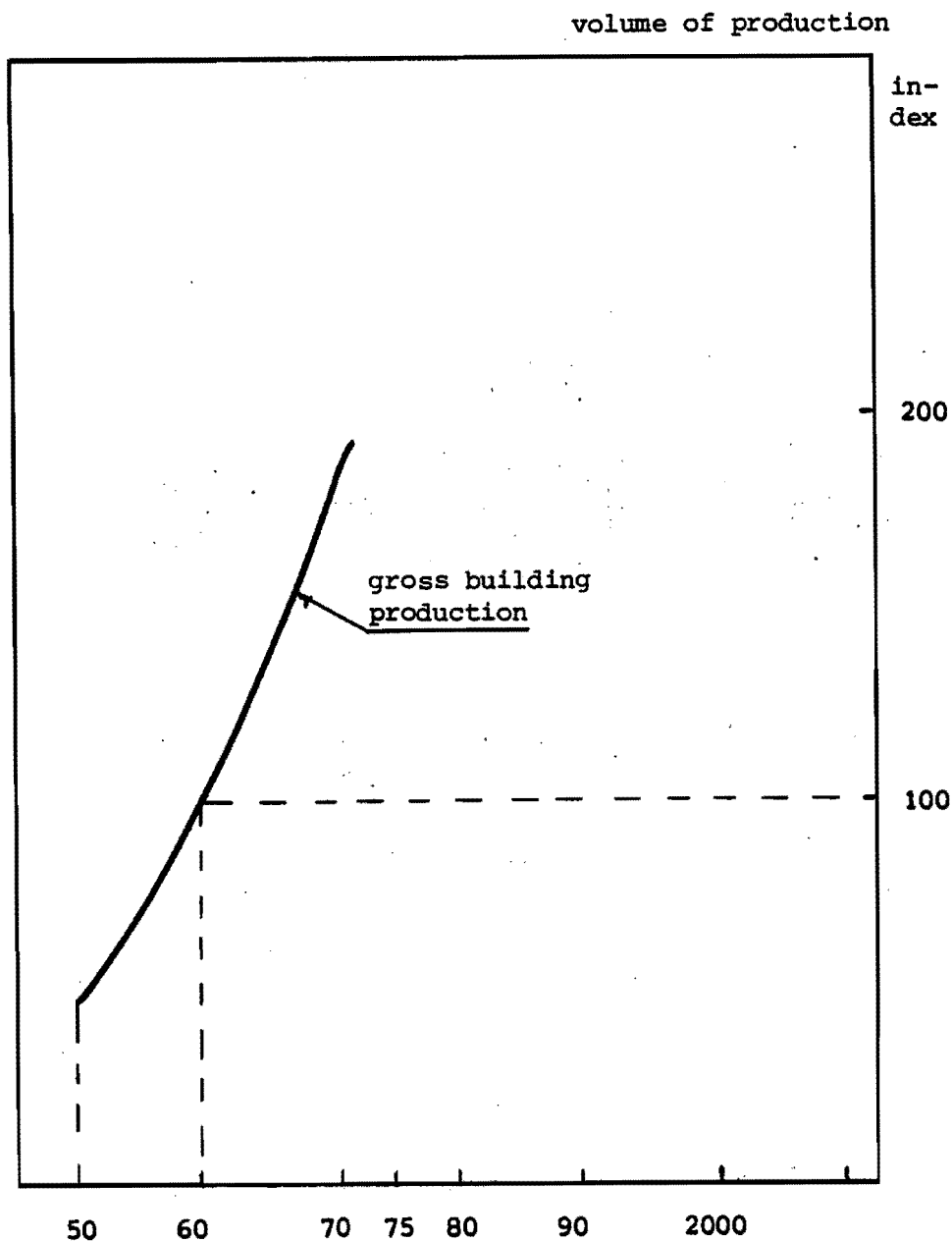
The adaptability of the construction industry during the period just past is not what should be concerning us, rather the investigation of the building task ahead, which forms an integral (and intriguing) part of the 1949 - 2009 programme, and of the potential ways of affecting it. I want to approach this topic in a general way as well, based on what are, in my opinion, acceptable assumptions, but in such a way that the investigation gives an insight into certain important problems with which we are faced.

The period 1972 - 2009

In order to orientate ourselves in relation to future developments, we will make use of a concept that reproduces certain important elements, such as building production, the net building production and the building stock in terms of time. We can summarise the overall picture in 6 phases, namely:

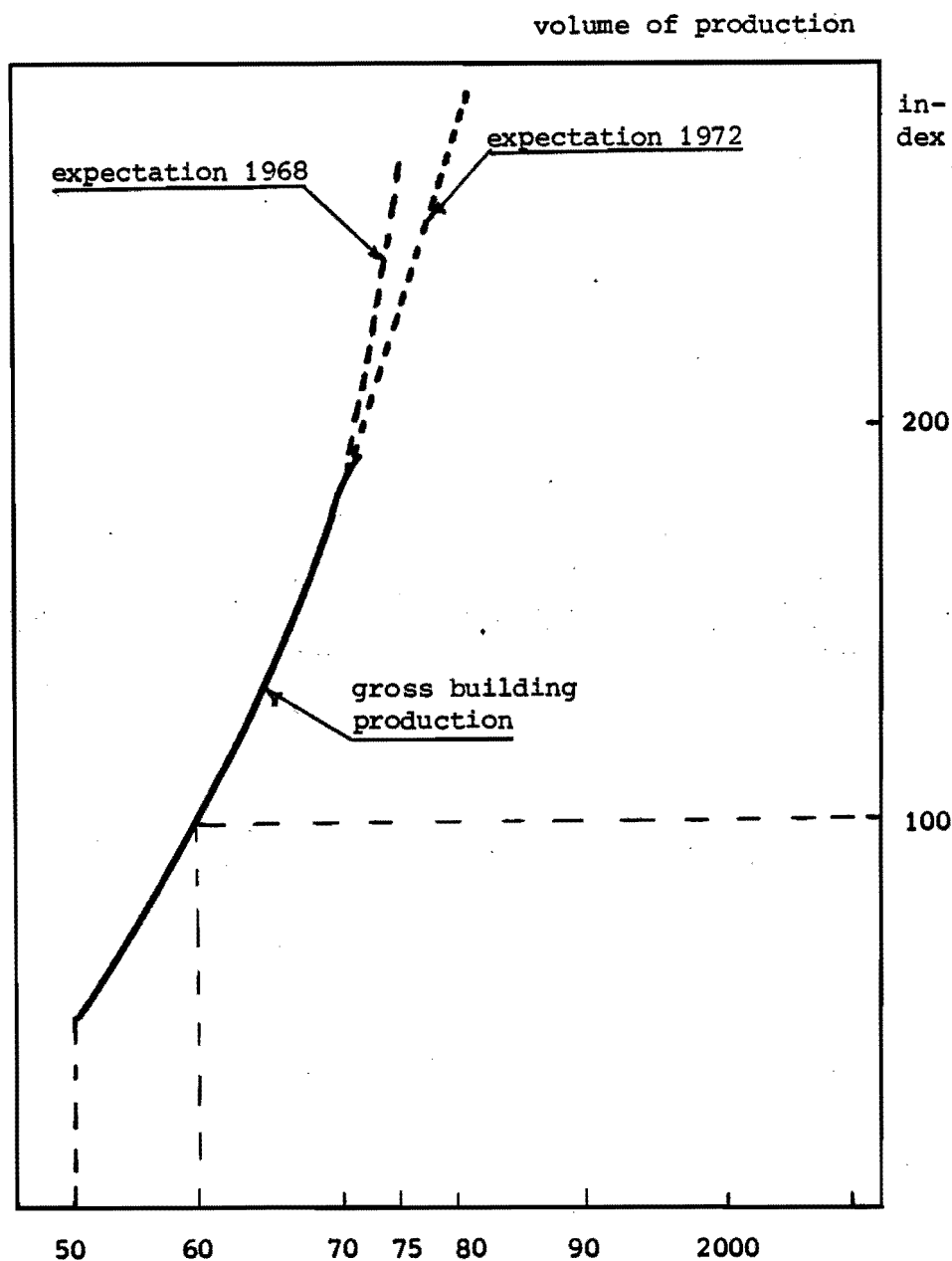
- 1 The gross building production 1950 - 1972.
- 2 The gross building production 1950 - 1972 and certain estimates regarding further development.
- 3 The gross building production 1950 - 1980
- 4 The volume of building stock 1950 - 1980 and the gross building production 1950 - 1980
- 5 The volume of building stock 1950 - 2009 and the gross building production 1950 - 1980
- 6 The volume of building stock 1950 - 2009 and the gross building production 1950 - 1980 and the net building production 1950 - 2009.

Gross building production 1950 - 1972
(1960 = 100)



The graph above shows the growth in total building production, as indicated previously at a different scale. The line for total production is also a reasonable representation of production in the three separate categories, namely: housing, industrial and government buildings, drainage and roadworks. These reach their maximum (1960 = 100) in 1973, 1970 and 1971 respectively.

Gross building production 1950 - 1972
and some expectations



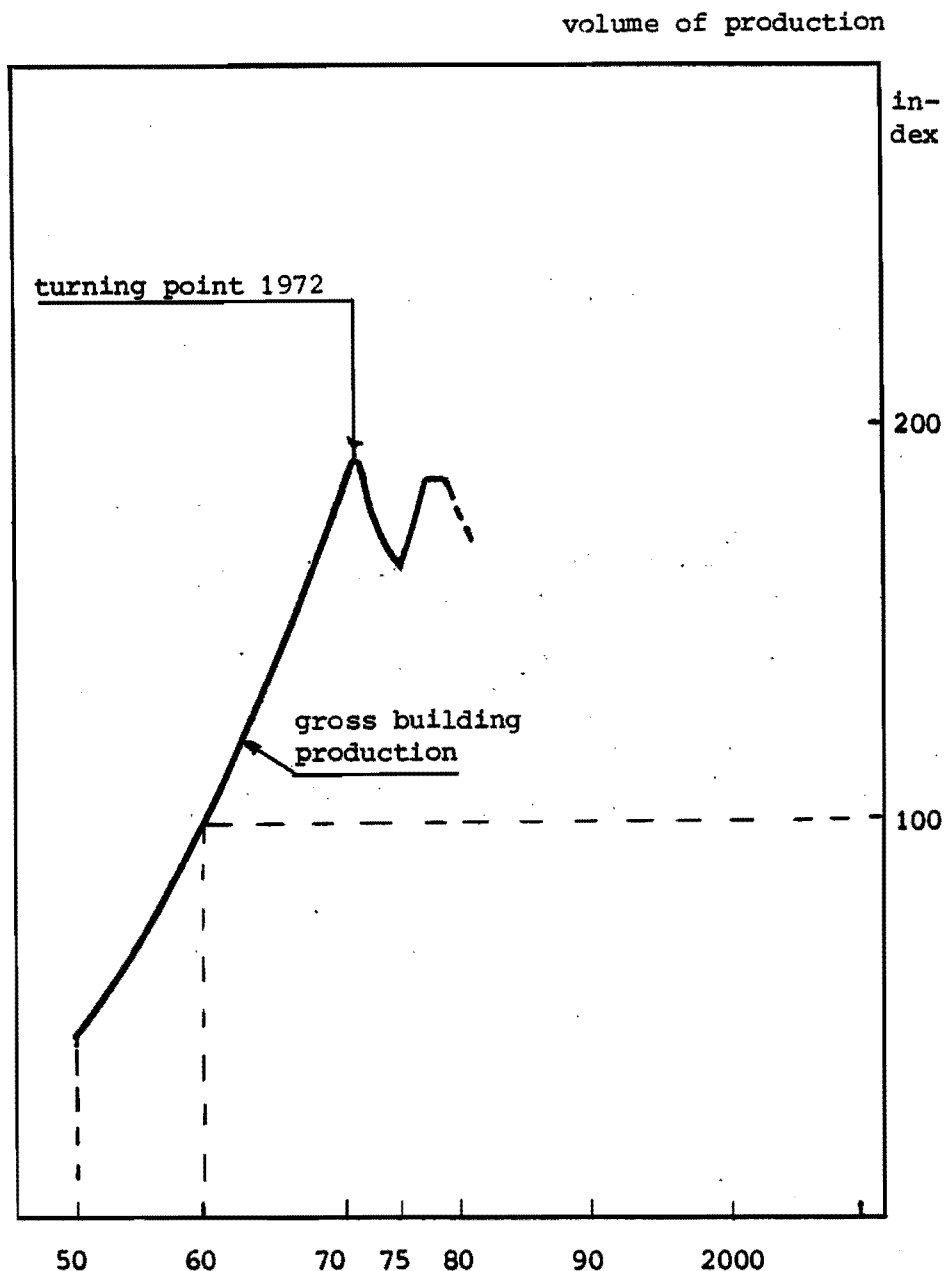
The broken lines show respectively the projections of the Economic Institute, Tilburg (1968) and the Central Planning Office (1972) regarding the growth of building production. 7)

- 7) Ec. Institute, Tilburg; report commissioned by the South Netherlands Contractors Association, 1968.

C.A. van den Beld, Director Central Planning Office, Baksteendag, 12th December, 1972. Prof. van den Beld estimated that over the decade 1970 - 1980 the volume of building production would increase by an average 4% annually.

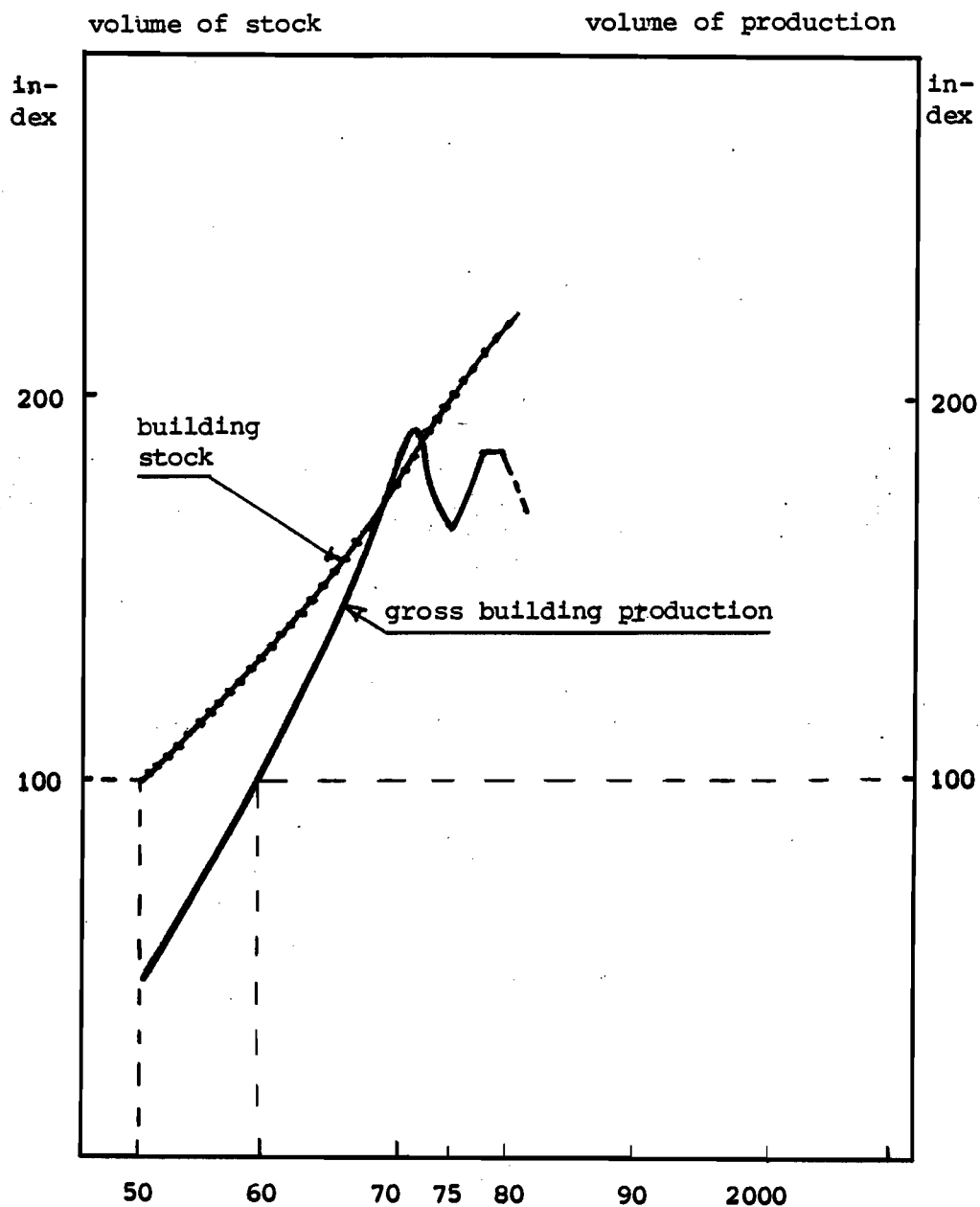
Het Financieele Dagblad, 28th February, 1975.

Gross building production 1950 - 1980



The expected increase in production indicated earlier did not materialise, instead there was a steep drop in production following a turning-point in 1972. This came as a completely unexpected development to many, especially politicians and representatives of the construction industry, and it had severe repercussions on employment levels. There were not many who could have foreseen the forthcoming change in the scope and composition of the building production and the accompanying repercussions.

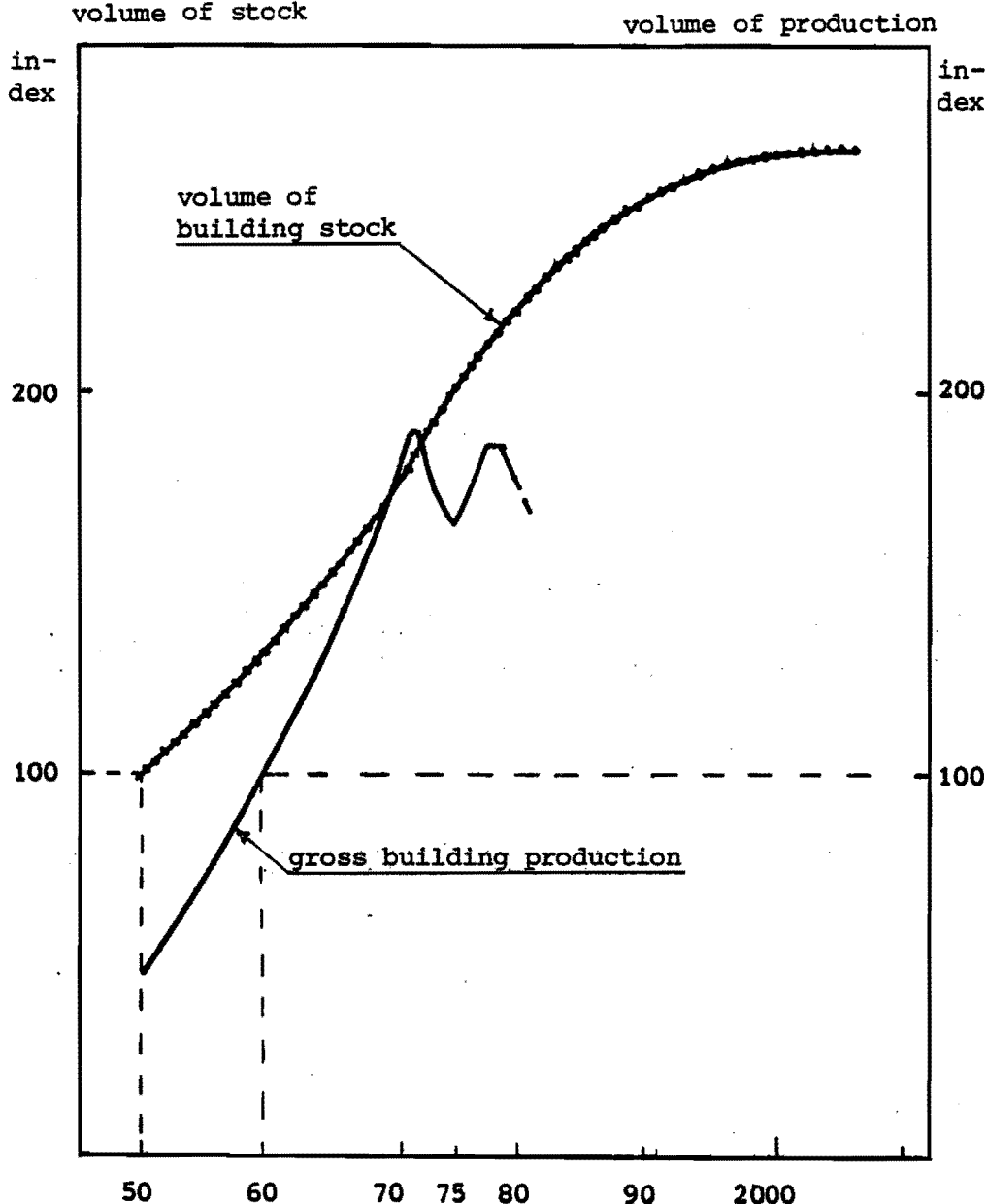
Volume of building stock 1950 - 1980
and gross building production 1950 - 1980



In addition to data regarding the growth in volume of building production, data is also available which makes it possible to trace the growth in the building stock.

Based on the 1950 stock, it can be seen that the dwelling stock was doubled between 1950 and 1975. It is assumed that a stock equal to that added in the period 1950 - 1975 would be needed as replacement to the 1950 dwelling stock.

Building stock 1950 - 2009 and building production
1950 - 1980
volume of stock



It is assumed that as a result of the zero population growth rate, the growth in building stock will also come to an end. The assumed growth in the building stock post 1975 is based on the increase of the dwelling stock to a maximum of around 6 million (c.f. Verstedelijklingsnota (Urbanization memorandum), max. 5.9 million in 2000, The Hague, 11th February, 1976).

The growth in the building stock occurs gradually. This stock is determined by, among other things, the size and composition of the population, the size and composition of employment and the demands made on the infrastructure. The development of the stock can be described with the help of a growth curve. 8)

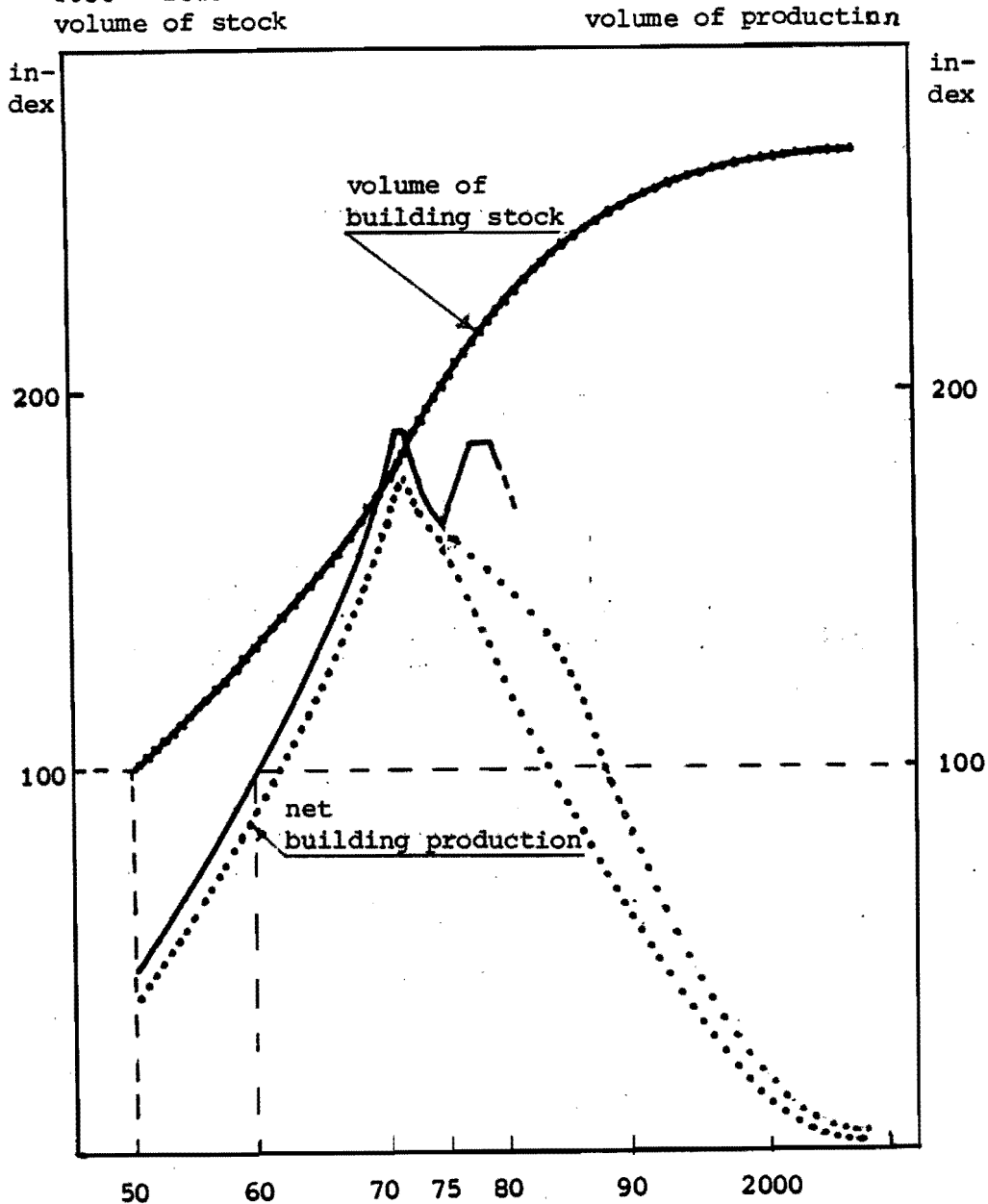
$$8) \text{ E.g.: } \frac{V_t}{N} = \frac{1}{1 + a \cdot e^{-ct}}$$

where V_t = stock as a function of time

N = saturation level

c = parameter which determines growth rate

Volume of building stock 1950 - 2009, gross building production 1950 - 1980 and net building production 1950 - 2009



In the comprehensive picture above the growth of net building production is shown. This net production will become zero at the moment the building stock no longer increases. The building production will then be totally dependent on replacement production, renewal, conservation and maintenance.

The continuity of growth to a relatively constant stock level is initially accompanied by a period of annually increasing building production aimed at expanding the stock, followed by (should be followed by) a period in which this production reduces.

The image portrayed above indicates that, if the assumptions made are correct, the force behind the building production, the necessary expansion of the stock, is progressively going to reduce in significance after 1972.

The composition of the production aimed at expanding the stock, derived from the growth curve which describes the growth in stock level, is known since 1950. There are no indications that important changes will take place in the relative make-up of the building stock in the last quarter of this century, whereby the relative production of the three allocation categories mentioned previously would undergo a significant change. 9)

The investigation of the development of the building stock - whereby the changes in the stock cannot be neglected - requires that special attention be paid to the use of the built environment by all involved. In this way the 'construction industry' is opened up. The industry is confronted by the consumers and vice-versa.

The building task, initially approached as a production matter, has become a design question. A design question whereby the quality of the built environment is taking a more central place.

The factors affecting the presumed development of the building stock (which constitutes the built environment), of the gross building production and of the net building production, affect all parties involved. As a result, no one can in fact be excluded from the decision-making process that must guide the design.

It can be assumed that decision-making regarding the quality of the built environment will be transferred, in increasing measure, from the construction industry to the community, i.e. society, in its totality. It must decide about fulfilling those needs which can be met through the built environment for all concerned, both in cultural, economic and social aspects.

Diverging interests emerge, especially among recognisable groups, which can be expressed in a political choice. (We cannot get determine whether the design of the built environment and its consequences are recognised as issues by the political parties).

There is also a job for the architectural department in the arena of preparing for the choice, even though this does not (yet?) form part of the construction process.

- 9) The functional relationship between dwelling stock, other buildings and the site, road and hydraulic engineering works is expressed in the relevant quantities which have characterised their share of total building production for many years, both in the Netherlands and in many other countries.

These quantities vary within such narrow limits that they can serve to characterise the composition of production directed towards expanding the building stock.

One of the tasks of architecture as a discipline is to facilitate this decision-making process. Building science is the knowledge and skill directed towards creating and maintaining the built environment. Therefore it is directed to building production and the built environment.

The decision making process to which building science must contribute demands an insight into the desirable level of production, both qualitative and quantitative, in relation to demands made by society in the use of the built environment and its constituent parts, both now and in the foreseeable future.

In the above, the quantity will also determine the quality.

The quality of the built environment is determined by the level of satisfaction which the community considers necessary.

This is rather obscure at present. One of the tasks of the department of architecture must be to help clarify this concept. 10)

A number of issues arising after 1972 face the construction industry, consumers and architects alike, and these, in addition to the change in character and scope of economic growth, are as follows:

- . the search for an adequate planning policy
- . the annual output of building production as a trend will no longer increase
- . it is clear that a "zero-growth" situation will arise in the building stock, which means that the contribution of the net building production to the total building production will fall continually
- . the scale of building production will be determined to an increasing degree by the rate of replacement and by renewal and conservation; in this way, the scope and tempo of urban renewal can come under pressure from production and employment considerations. 11)
- . to an increasing degree, building costs (prices) will influence the scope and composition of building production
- . choice between specific and general techniques; it is necessary to investigate the extent to which this will influence the design and freedom of choice in the future

10) An architectural department which intends to carry out the necessary research involved will have to achieve this on the basis of available finances.

11) Building production:

$$B = E + R_1 + R_2 + M_e$$

$$B' = E$$

B : gross building production

E : expansion = net building production

R₁ : replacement

R₂ : rehabilitation (renewal
conservation)

M_e : maintenance

- . shortage of skilled building workers and surplus of partly and differently-trained workers 12)
- . promotion of small scale development
- . interest for differentiation and parallel processes
- . organization of the construction process and building technique characterises the development of industrialisation in the building trade. The decision regarding further industrialisation concerns all those involved in the built environment
- . government control of the demand for building production (building programme) has lost its meaning; socialisation of demand (this does not need to imply centralisation) can become the norm
- . by making a choice, one is confronted by dilemmas and the scope for further decisions is restricted
- . the requirements which must be met in equipping the built environment.

The architect is not solely concerned with the last-mentioned issue. He will need to contribute to all of them and to those omitted in order to reach solutions.

The issue of the immediate future will no longer be the response of the construction industry to the demand for building production, but the response of the community to the requirements posed by the equipping of the built environment.

Architects, the construction industry and the consumer are faced with the implementation of the approaching building task.

An impression has been traced of the main elements of this task. In the constantly rejuvenating world of science, old theories are discounted and new ones which can contribute to the solution of current issues are promulgated. 13)

This concept is presented for criticism, but the challenge is to replace it with a new concept that better represents the building task ahead.

- 12) A survey on behalf of the Association for Professional Training for Building Trades shows that building firms now consider a good training more important than they did a few years ago, and that especially the small firms have changed their opinion. There is a greater awareness of the value of well-trained employees in 1977 than indicated in the survey of 1974. This information is presented in the Association's Annual Invitation 1977 on 1st December, 1977. The extent to which the collected views of those directly involved can serve as a basis for policy of the future is questioned here too.
- 13) J.H.F. Umbgrove, De beeldenstorm der wetenschap, 's-Gravenhage, 1945.

5 THE ECONOMIC PROBLEMS OF URBAN RENEWAL

Rehabilitation, an alternative

The results achieved in the field of urban renewal are not among the most noteworthy aspects of the subject. What is remarkable, however, is the unmistakable change in thinking on the ways of solving this problem which occurred during the 1960s. The change concerns the recognition of rehabilitation, alongside reconstruction and slum clearance, as a means towards urban renewal. As envisaged here, rehabilitation does not relate primarily to the restoration of buildings which are regarded as monuments, but to improving the condition of old and less useful parts of the stock of normal, non-monumental buildings.

In the Netherlands, the rehabilitation of existing structures was officially placed on a par with reconstruction and slum clearance in 1971. In that year, the report entitled "Stadsvernieuwing" (Urban renewal), compiled by the Committee for the study of the financial consequences of slum clearance and urban reconstruction, was published. This committee was set up in 1968 by the Minister of Housing and Town and Country Planning. The report showed that although obviously slum clearance and reconstruction alone were considered when the committee was set up and its terms of reference were established, it decided to extend its study to include rehabilitation.¹⁾ The committee (and it was not alone in this) reached the conclusion that in many cases rehabilitation is the most appropriate method of improving the condition of out of date parts of towns and villages.

The changed pattern of thinking in the Netherlands concerning urban renewal cannot be explained by any large-scale, unfavourable experiences in carrying out reconstruction and slum clearance which involved the demolition of existing buildings.²⁾ It would, however, be true to say that not all

projects of this nature which have been, or are being, carried out are viewed favourably, and that in many cases a section of the population is opposed to reconstruction and slum clearance schemes. A gradual reappraisal of old structures is discernible. It is anticipated that these structures, modified where necessary, can still perform a useful function - for example, for housing or small-scale businesses.

Another question which arises is whether the newbuilding which is an essential part of reconstruction and slum clearance is really desirable, observing the growing doubt surrounding the solutions which are generally given for the problem of newbuilding. The recognizable, the familiar, is not being replaced by a solution which conforms to the sense of place.³) The new is repeated repeatedly - indeed to the point at which there is a surfeit of it. Surviving examples of the recognizable are becoming scarce as a result of reconstruction and slum clearance; against this, replacement and expansion of the stock of buildings has produced a deluge of new - monotonous - structures.

On the basis of economic theory, one would expect the scarce commodity to be valued relatively highly, and that which exists in abundance at a low figure. In the area concerned, however, a paradox exists. The value is not reflected in the price. In practice, new buildings command a high price, and the surviving familiar buildings, which are becoming scarcer, a low price. The explanation for this must be sought in differences of technical quality between old and new buildings and in the growth of building costs, among other factors. The latter, however, could imply that building costs do not constitute an adequate basis for determining prices, and that these are thus unsuitable for the purpose of comparing old and new structures. This implies that price alone is not sufficient for the purpose of weighing sense of place against technical quality. The tempo in which opinions in this field have changed in the Netherlands may, for example, be gauged from the book entitled 'Op zoek naar leefruimte' (In search of living space) by Das, Leeftang and Rothuizen, which was published in 1966. According to these authors, the conservation of a fine and/or interesting town centre could be accentuated by demolishing the surrounding 19th-century buildings, which in many cases are ugly.⁴)

In the midst 1970s, there was no longer any certainty that the demolition of such buildings will take place in the foreseeable future; indeed, broadly speaking, it has largely disappeared. The resulting uncertainty is not limited, and this applies also to the towns. On the contrary, it relates to the approach to urban renewal - in terms of scope, tempo and nature - in its entirety, i.e. the renewal of both the town centre and the surrounding, old districts. Outside the Netherlands, rehabilitation as an alternative to slum clearance and reconstruction was proposed at the beginning of the 1960s. This is evidenced in the publications by Wilfred Burns and Martin Anderson, among others. Burns relates his experience of reconstruction in England in his book "New Towns for Old", which appeared in 1963. In this, he deals with reconstruction and rehabilitation, both of which he regards as solutions to the problem of urban renewal.5)

Anderson, in his well-known study "The Federal Bulldozer", which was published in the United States in 1964, states, among other things, that when events showed that urban renewal by clearance was not working effectively, more emphasis was placed on attempts to rehabilitate existing structures.6) When rehabilitation is recognized as an alternative - in cases where it is feasible - the problem of choice arises. The various solutions can be compared, and the pros and cons of each weighed. As yet, no practical yardstick exists for weighing these.

The yardstick

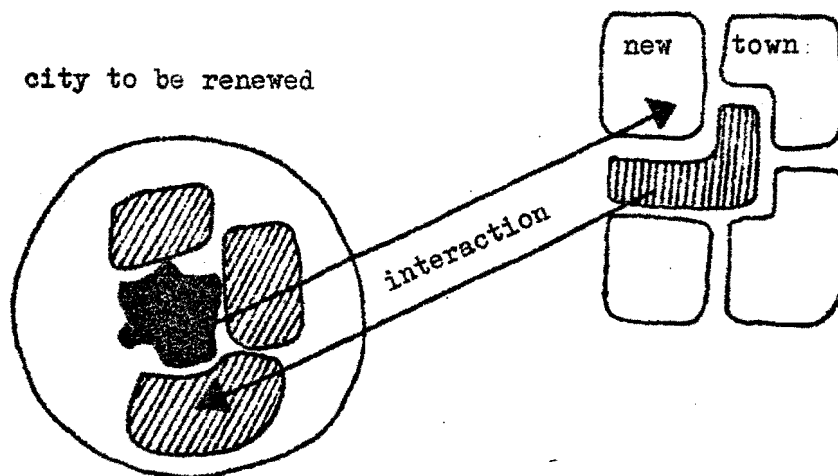
In 1969, in their book "Urban Decay," Medhurst, the town planner, and Parry Lewis, the economist, dealt with, among other things, the relative merits of reconstruction and rehabilitation. This book contains the results of research carried out in England in the preceding years. According to Medhurst and Lewis, urban renewal, in the sense of slum clearance and reconstruction, is a slogan. They are of the opinion that care is needed if improvement, i.e. rehabilitation, is not to become a slogan also. If we must have a slogan, they say, it should be "Urban adaptation based on urban understanding." 7)

The first problem demanding solution is thus the urban understanding; in other words, recognition of the demands which the city is required to meet. Any adaptation must

include changes in the built environment. A clear distinction must be made between the life which goes on in the city and the built environment within which, and in which, this is consummated, and due account must be taken of the interaction between these.

The changes in the built environment may relate to existing structures or to additions to these. After all, urban renewal is not restricted to old cities. New cities also make a contribution to the renewal of old cities. Decisions concerning new cities must also take account of the situation in, and development of, the area concerned. New cities, like new districts, are part of the interrelated process of expansion and renewal of the built environment. For example, the building of a new town such as Almere is in part governed by the manner in which the urban renewal in Amsterdam is being accomplished. It is partly on the basis of the interrelationship that the process of construction in its entirety is involved in this reconnaissance of the economic aspects of urban renewal.

Fig. 1 New towns also make a contribution to the renewal of old cities



Cities of which only a small part is new have existed for a long time. Of highly diverse size and composition, they form the nuclei of the built environment. The existing built environment is subject to continual pressure to adapt in order to meet the demands of the times and those imposed by population growth, changes in the traffic pattern and, most important of all, by changes in social habits. Recognizing these developments and arriving at a corresponding design, however, are far from simple matters; nor are they free of prerequisites. As far as the development is concerned, whereas, for example, in the 1960s the strengthening of the city function was the prime motive for renewing a city centre, today the restoration and strengthening of the residential function constitute a powerful competitive factor.

In assaying the demands which the nuclei must meet within the built environment, a number of elements must be brought into play. Among these are psychological acceptability, social integration, the balance between the satisfaction of individual needs and the collective services necessary to this end, and the administrative balance.⁸⁾

If, in one or other way, it is established or subconsciously felt that the built environment is no longer adequate, steps will be taken. These result in changes in the works which comprise the infrastructure and the superstructure. The infrastructural and superstructural works, i.e. roads, etc. and buildings respectively, together make up the built environment. Expansion, replacement and modification of these works is a continuous process and one which has been swept along on rapids during the second half of this century.

The same can be said of the increase in the number of views regarding the demands which social habits impose on existing structures and those which will be built.

The number of such views is an indication of uncertainty and conflicting interests in the choice of solutions.

Decisions which are taken and implemented, and which relate to the built environment, have far-reaching consequences: the built environment also influences the life which goes on within it. All who live there use the environment. But not all users are consulted when decisions regarding the establishment of a built environment, or changes in existing ones are taken. Nor, in most cases, are groups of users. The question of who should take such decisions, and how they should be taken, was a subject of mounting discussion in the 1960s. Here are a number of examples.

The author Max Frisch had, among other things, the following to say: 'The meagre results in the field of town planning are not attributable to shortcomings on the part of the technicians as such, but to failure on the part of the laymen; they leave everything to the technicians. To put it another way, the layman poses the problem, and it is up to the expert to solve it. That, at least, is how it should be. We need the expert, but as an expert in his own field, as architect or constructor, and not as ideologist or designer of society.' *) Here, the author rightly demands a place for the layman in general in the decisionmaking process relating to the built environment. However, for him - and also, for example, for a municipal council - there remains the problem of how to formulate the programme of demands which the planners, in carrying out their task, must meet. What is at issue here are the urban functions which have to be fulfilled, their number, relative scope, order of priority and commixture. It is, however, not true that architects in general regard themselves as ideologists of society, even though in their work they are repeatedly confronted with the relationship between built environment and society. In this context, the French architect Pierre Dufau, among others, pointed in the 1960s to the absence of an up to date theory for the built environment. 'Architecture is a pretty girl who can give no more than she has,' he said.**)

In a preface to the publication 'People and Buildings,' which appeared in 1972, the sociologist Robert Gutman commented that the interest in joining the resources of the social and design disciplines is growing fast at the present time.11)

This interest is also reflected in the architectural training courses now held in the Netherlands.

*) 'Die Fehlleistung, die sich Städtebau nennt, beruht nicht auf einem Versagen der Techniker als Techniker, sondern auf einem Versagen der Laien; sie überlassen sich den Technikern. Nun ist es aber so: Die Aufgabe stellt der Laie, der Fachmann hat sie zu lösen. Oder so müsste es sein. Wir brauchen den Fachmann: aber als Fachmann auf seinem Gebiet, als Architekt, als Konstrukteur, nicht als Ideologe, nicht als Entwerfer der Gesellschaft.' 9)

***) 'L'architecture est une belle fille qui ne peut donner que ce qu'elle a.' 10)

Considerable obscurity and uncertainty in regard to the basis upon which programmes of demands should be arrived at still exist among all who are concerned with urban renewal. Moreover, differences exist between one city and another. This uncertainty may be attributed to the fact that the city is still an incompletely and imperfectly explored area and one which demands further research.12,13)

Goal: urban renewal; Means: building process

Economists have long been interested in cities as spatial entities in which 'supply' and 'demand' meet. Their interest in the realization and preservation of built environments is of more recent date. Economists differ in their approach to the phenomenon designated 'city.'

In a publication of the Commissariat Général du Plan in France, entitled 'Les villes: la société urbaine,' which appeared in 1970, the city is characterized as follows:

- 1 a phenomenon within which economic phenomena occur;
- 2 a phenomenon in which, on the occasion of its construction, economic calculations can be performed;
- 3 a self-contained economic phenomenon. *)

These characterizations reveal the complexity of the relevant problems. The first two methods of approach are interrelated. Starting from a given pattern of services, they serve, for example, to make the costs of the infrastructure and the superstructure as low as possible. The results of research obtained in this manner are limited to a given local situation.

If the city had to be viewed in accordance with the third characterization, i.e. as a specific production unit, it would, as such, probably be one of the important explanatory variables in the general pattern of economic development.15) In that case, the manner in which the city is laid out influences its contribution to this development. Knowledge concerning the nature and extent of these problems is still

- *) 1 un phénomène dans lequel se produisent des phénomènes économiques;
- 2 un phénomène ou à l'occasion de la construction de laquelle peuvent être effectués des calculs économiques;
- 3 un phénomène économique en soi.14)

inadequate to enable the city to be viewed as a production unit at the time of being equipped. The equipping of a city as a techno-economic production unit is not the most important problem relating to the renewal and newbuilding of cities, but it is an interesting constituent problem. The preparatory phases leading to the execution and maintenance of infrastructural and superstructural works afford an opportunity to ascertain the demands which will be imposed on the necessary resources. Chief among the latter are labour, raw materials and capital. The question arises whether this approach implies that urban expansion and renewal should be viewed as a construction problem. The answer is 'No.' Urban renewal is concerned with the relationship between life in the city and the possibilities which the city offers.

Urban renewal as a goal is aimed at the functioning of the city and its components. The decision to undertake the renewal is governed by the demands to be imposed on the city. These are rooted in the approach to society and the relationship between people and the built environment. Urban renewal is therefore among the components of activities aimed at bringing about changes in social relationships. Urban renewal is, nevertheless, realized with the aid of building processes. The sum of these processes constitutes a building problem. The problems associated with the technical execution of the building process are important, but the execution of this process is a means and not an end. It is, however, a means which merits particular attention.

In order to obtain a deeper insight into the relationship between urban expansion and renewal on the one side and the building process on the other, it is of value to distinguish between the following four groups of functions:

- 1 the concentration functions
- 2 the use functions
- 3 the construction functions
- 4 the process functions.

These may be described as follows.

The concentration functions include the collective functions which must be fulfilled with the aid of the buildings. The use functions are concerned with the function of building works for the benefit of the users. The construction functions are the technical functions which are fulfilled by means of elements of the building constructions.

The process functions are those which must be fulfilled in order to realize, maintain or modify a building project, a group of building projects or a structure created by building.

The first of these groups - the concentration functions - which embraces living, working, education, culture, health care, recreation, administration and traffic, among others, relates to the spatial grouping and intermingling of the functions.¹⁶⁾ The complete segregation of the functions (the formation of ghettos) and the total (atomic) integration of the functions may be distinguished as the extremes in this context.

The second group - the use functions - is based upon the purpose served by buildings such as dwellings, shops, banks, schools, business centres, etc.

The building serves, among other things, for the deployment of activity by the user. The "development cycle" of Lönnberg-Holm and Larson defines the successive phases of the function of the building for the user as research, design, production, distribution, utilisation, elimination.¹⁷⁾

The third group - the construction functions - embraces the primary technical functions of constructions and construction elements. Torroja has summarized these

- except to lay foundations - as follows:
- To enclose a certain space and to protect it from the natural elements of wind, rain, and snow, from changes in temperature, and from noise. This function is achieved by the use of walls and roofs.
- To provide passageways for the movement of persons and vehicles. Floors, staircases, and ramps of buildings, and bridges and viaducts are used for these functions.
- To resist the lateral thrust of earth, water, or other fluids. Included in this category are dams, dikes, reservoirs, storage tanks, silos, and retaining walls.¹⁸⁾

The fourth group - the process functions, which relate to the planning and execution of the building process (both are components of that process) - comprises five functions, namely the taking of the initiative to build, the provision of the site, the drawing up of the design, the financing (of the building process as well as the building) and the execution of the project. The last of these embraces purchasing, the organisation and execution of the production process, and the supervision.¹⁹⁾ The functions in this group are fulfilled by those who participate in the building process.

It will be clear from this brief summary of the four groups that the first two can be considered together, as can the last two.

The considerations upon which the decision concerning the city and its facilities must be based can be derived from the first and second functional groups, the goal functions. The third and fourth groups, the means functions, are concerned with the realization of the chosen goal. For the fulfilment of the construction functions, technical solutions are developed; the application of these lies in the execution of the building process. The economic significance of the execution of the building processes in their entirety, however, constitutes such an important component of the national economic activity that it cannot be expected that this execution - and the allied production apparatus - will be neutral in respect to either urban renewal or urban expansion. Accordingly, it is desirable that we should obtain an insight into the situation.

The non-neutral means

The building production stems from the execution of the building processes in their entirety - which is effected by the building industry. In the Netherlands, the annual share of building production - which embraces the construction of new, and rebuilding of existing, infrastructural and superstructural works - in the gross national product was of the order of 11 % to the early 1960s. In the ensuing years it rose to the relatively high level of 16 % or thereabouts. The share of building production in the gross national investment in fixed assets has been running at about 58 % in recent years. The balance was accounted for by investments in machinery and means of conveyance. The percentage in the Netherlands is not unique. National figures differ, depending on whether they relate to developing countries or to countries with developed economies.20)

A substantial portion of the total investment in building production is undertaken by the government. The total sum invested by the government in all its forms is virtually identical to the sum of government expenditure on building production. This means that government investment principally relates to the expansion and renewal of cities and other built-up areas, and to works which form part of the national infrastructure. The sum total of investments in all works in these categories is shared between government and private enterprise. In the Netherlands, the government's share exceeds 50 %.

In the Netherlands, the State has a choice between financing its investments by means of loans or out tax revenues, and therefore its function may be compared to a structural bookkeeping by double entries which serves to balance the national economy.²¹⁾ In making its choice, the government seeks to achieve a macro-economic balance between national savings and national investments. The level approximated for this balance be such that the fullest possible opportunities are created for employment as a whole, while at the same time efforts are made to avoid stressing the labour market.

The quantitative demands which building production imposes on the available funds, particularly on savings, together with the functional position which building works occupy in social life as a whole, the relatively large share taken by the government in total investment and the government's responsibility for macro-economic stability have all led to a situation in which building production is a lasting object of structural and economic policies as components of overall government policy. The position which building production occupies in the national economy can have consequences for urban renewal. If the volume of building production is great in proportion to the available finance, the government must act to reduce it. Conversely, if production is proportionately small, it can be stimulated - especially to provide additional employment in the construction industry. Where no backlog in production aimed at increasing the stock of building works exists, the expansion of production must be found in the replacement and/or rehabilitation of existing structures.²²⁾

This is not a new concept. It can, however, mean that the means - the building process - becomes the goal of urban renewal.

The maintenance of the macro-economic balance by the government in no way necessarily implies that building production is stable, and possibly increasing. The aim here is to maintain a balance between national savings and national investment, and not one between the extent of building production and the capacity available for its realization.

Equilibrium in both spheres is important.

It is of importance for the economy of any country that the cost of the volume of building production required annually for the expansion and replacement of the total stock of structures should be as low as possible. The construction industry is concerned to see that the available building capacity is fully utilized.

The extent of the building production which can be achieved with the sum of the national savings available for this purpose is influenced by the level of building prices and the developments in regard to these. During the 1950s and the early 1960s, both the volume of building production and building prices rose steadily.

Building prices are at present rising relatively steeply; that is to say, they are rising faster than the price of the gross national product. The sharp rise in building prices is not a specifically Dutch phenomenon, however. It is taking place in many other countries, and in those with highly developed economies, in particular, is an unmistakable phenomenon. To quote an example, 'The Economist' of 11th September 1971 carried an advertisement by the construction firm Wates, pointing to the influence of rising building costs on the budget available for construction. The rise was said to be 1 % per month, or nearly 14 % per annum. Wates's advice was not to defer building on account of the steep and continuing rise. On the contrary, they advised placing contracts for planned building works without delay simply because of the upward trend.²³⁾ To conclude that building prices rise at the rate of 1 % per month without taking into consideration the development of the prices of the gross national product - which is greatly influenced by inflation - results in a distorted image.²⁴⁾ Nevertheless, the relative and absolute increases in building costs constitute a problem which demands attention. It also has consequences for urban expansion and renewal. Generally speaking, the rise in building prices has not resulted in a slowing of production aimed at increasing the stock of building. This is because buildings are indispensable in our society.²⁵⁾

The concentration and use functions, referred to earlier, point to the fundamental social significance of structures. The availability of sufficient buildings is a condition for the acceptable fulfilment of these functions. To this end, principals take initiatives which lead to the necessary building production. For them, the level of building prices is a datum. Principals initiate building because the end products are indispensable for their activities or others for which they are responsible. It can be stated that rising building prices do little or nothing to diminish the demand by principals for expansion of the stock of buildings, particularly if they anticipate that the upward trend in prices will continue. Demand on the part of principals is little affected by price. The building capacity offered by the firms concerned has at all times kept pace with the extent of the demand for building production, i.e. the orders placed by principals. Building production consists of the production for expansion plus the production for replacement and maintenance of the stock of buildings. In the Netherlands, the growth which took place during the 1950s and 1960s was divided into normal growth, stemming from population growth and economic growth, and growth aimed at eliminating the backlog incurred during the war and the ensuing period. The production aimed at making good the deficit is now gradually declining in importance. If the scope of the production is to be maintained or increased, it will be necessary to step up the rate of replacement. In this way, considerations of production could serve as a stimulus for urban renewal.

As alternatives to replacement there are non-replacement and/or improvement. In weighing these, the building price can - in contrast to the situation pertaining to the expansion of the stock of buildings - fulfil an important function. The choice facing the principal is gradually ceasing to be one between the creation or otherwise of a new building or a new district; in the future it will be more one of whether or not to replace existing buildings or outdated districts. It may also be possible to consider improvement instead of replacement.

A principal will be much more sensitive to the level of building prices when faced with a choice between replacement and improvement than when, following an increase in activities for which buildings are indispensable, he must decide whether or not to proceed with newbuilding. In the former case, he can wait without relinquishing the building which he already possesses; in the latter, he must choose between getting a building or not getting one.

The volume of, and expenditure relating to, building production - which serve for the expansion, replacement, improvement and maintenance of the stock of buildings - will in future increasingly be determined by the choice between replacement and improvement and by decisions on the degree of maintenance. The choice which principals can make on behalf of, or in consultation with, users encroaches upon the continuity which the building firms have so far experienced. The effect which the lack of continuity has upon the building industry - in particular upon employment - will result in active intervention from within the building industry in matters of urban renewal. In such a situation, the tendered price can be a means whereby individual firms will maintain continuity.

Building techniques and production structure

The steep rise in building prices during recent decades has given rise to many kinds of criticism of the building industry. Two aspects of this criticism merit particular attention, from the point of view of urban renewal as well as others. These concern building techniques and the production structure. The latter embraces the structure of the building process and that of the building industry. Both techniques and structure have been greatly influenced by the expansion which took place in the post-war period. Criticism of building techniques is heard both inside and outside building circles. The story that building techniques have not changed since the Middle Ages - bricklaying being cited as an example - is still current. This assertion, however, is scarcely tenable.²⁶⁾

The failure of building capacity to keep up with the demand for building works, and the influence of this failure on building costs, have more than once been referred to. Dealing with the matter, Gunnar Myrdal, in his opening speech to the C.I.B. congress in Copenhagen in 1965, said: 'The gap between demand and supply in an internationally non-competitive industry means also that the contractor regularly operates in a seller's market, which implies that he has less incentive to rationalize his production in order to cut his costs.' ²⁷⁾

The author begs leave to doubt whether the lack of incentive to rationalize in order to cut costs was the principal consequence of the gap between the demand for, and supply of, building capacity. Certainly the development of new techniques and the changes in the production structure are among the principal consequences.

The existence of the gap referred to resulted in, among other things, a remarkable technical development in the building industry. To observe this, it is of value to divide all firms involved in building production into three groups in the manner shown in Fig. 2, namely:

- 1 firms in the building materials and supplies branch;
- 2 firms in the "order-taking", i.e. executive branch: building contractors who, on the instructions of companies or individuals in Group 3, carry out the work on the site;
- 3 principals, who participate in the realization of building works through bodies charged therewith and/or through their advisers.28)

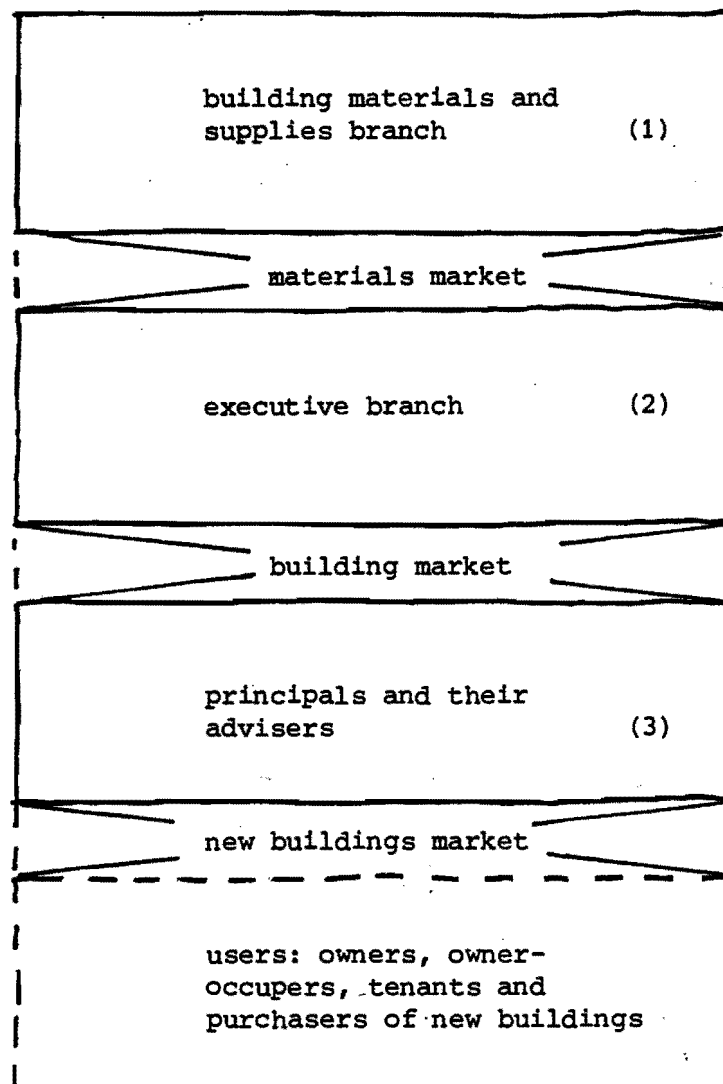
These groups form the elements of the structure of the building industry. Originally, the building process was made up of the following phases:

In designing a building, the principal - Group 3 - proceeded on the basis that it would be realized by the executive building contractor using generally applicable - generic - techniques, use being made of standardized materials and elements of selected types which are supplied by the building materials and supplies branch.29) Examples of the use of a generic technique are to be found in traditional brick constructions.

The gap between supply and demand in the sphere of building capacity which has been referred to - and which, as far as the supply is concerned, is determined by the firms in Groups 1 and 2 above - has led to "fragmentation" in building techniques and in the availability of building materials. It would be true to say that it has become quite difficult to obtain a clear picture of the range of competing materials offered by the firms in Group 1. In addition to the 'generic' techniques, 'specific' techniques have developed. Both are used in the fulfilment of the construction functions. The specific techniques are not techniques which can be employed by all firms, but ones which serve to distinguish the firm by which they were introduced from other firms. They constitute a means

whereby price competition can be replaced by other forms of competition. The absence of real competition between building contractors - a product of a long period during which the supply of building capacity has lagged behind the demand for it - has led to a widening of the range of alternative specific techniques, but has not produced any deepening of generic techniques. This phenomenon is particularly manifest in the housing sector.

Fig. 2 It is of value to systematically classify all firms concerned in building production



The multiplicity of techniques, many of which are marketed by firms as industrial building methods, is accompanied by a narrowing of the market. Every specific "marketing-oriented" technique has a market of its own.³⁰) Relatively speaking, generic techniques originally had a wide field of applications. This has been, and continues to be, eroded by the development of specific techniques - some of which are ingenious - which can only be used on a limited scale. Their application is governed by the share of the market and the continuity in the turnover of the firms which can employ them, and is therefore limited. The scale on which generic techniques can be employed does not depend upon an individual firm. They can accordingly be used on a large scale.

The criticism of traditional building techniques and the often inadequate analysis of the changes which occur in these techniques have also given rise to the superseding of inexpensive generic techniques and others of a simple nature. The use of one of these techniques instead of a new modern technique can serve to reduce building costs. In his book 'Third Generation,' published in 1972, Philip Drew refers to the classic experiment carried out by Hassan Fathy at Gournah, in Egypt, in the period 1945-47.³¹) There, the use of traditional building materials made it possible to build a village for seven thousand farmers, the cost of which was fourteen per cent of that what would have been the case if reinforced concrete had been used. Drew reiterates the statement that we must resist the tendency to improve a thing which is already adequate - a tendency which is not altogether strange to technicians.

Broadly speaking, the multiplicity of techniques which have been developed and applied since 1945 have not so far resulted in a pluriform, i.e. non-monotonous, built environment. Rather it would be true to say that in the past the generic - uniform - techniques produced a pluriform result, while the present-day pluriform techniques produce a uniform result. Neither result, however, can unreservedly be attributed to the techniques employed.³²)

In many instances, the development of the technique and of alternatives constitutes a datum for the principal and the designer. Their choice nevertheless influences the further development.

As is the case with technical development, the development of the production structure is accompanied by changes. Among the ways in which the building industry defends itself against criticism of rising building prices is to point to the existing production structure. This, after all, differs greatly from the structure of industry as a whole. The separation of design and execution in the building process is said to be among the principal factors which stifle the economic development of building. The structure of the building process, which exerts a major influence on the structure of the building industry - which has already been sketched in broad outline - is increasingly exposed to criticism. The critics assume that the rise in building prices could be arrested by modifying the structures of the building industry and the building process. Yet the question should be posed: should the starting point for the economic development of building be sought in the production structure ?

The production process in the building industry embraces the process functions previously mentioned. Except in cases where the process is fully integrated, these functions are fulfilled by the principal and the building contractor, working together. An example of a fully integrated process is provided by the speculative builder. The manner in which the process functions are wholly and partly divided between the two parties may vary from one case to another. The principal, in particular, fulfils the function of taking the initiative; it is he who decides who shall undertake the design, and he also determines the content and extent of the task of the contractor. Principals, both government and private individuals, who constitute a heterogenous group, bear the responsibility for building production and, by wholly or partly fulfilling a number of process functions, participate in the building production with the aim of obtaining a building or a complex of buildings, either for their own use or for offer on the market for new buildings. As has already been mentioned, the government is directly involved in more than half of the activity of the building industry. The various organs of government have at their disposal numerous official bodies capable of fulfilling the task of the principal, or can charge others with this task under their supervision. Accordingly, the section of the building industry from which orders emanate

includes a number of "State building firms" and "building firms" belonging to lower public bodies, which have the task of planning and partly executing building projects. These 'governmental building firms' operate primarily in the infrastructural sector, and in lesser degree in the super-structural sector.33)

Since 1945, a gradual but clear change has taken place in regard to the task of the principal - including government in this role. In a number of cases, his share in the sum of the process functions to be fulfilled has diminished, while the contractor's share has increased.

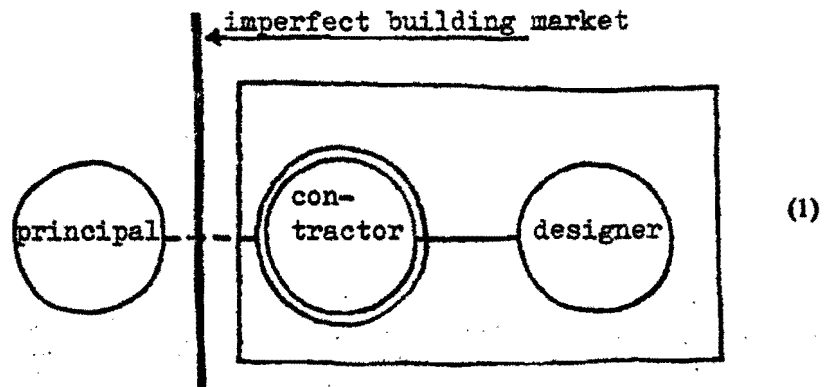
This diminution also occurs when the task of the principal is taken over by a project development company. In that case, the building market is eliminated from the principal's points of view, and its place taken by the market for new buildings. Instead of operating in the building market where, under normal circumstances, he enters into an agreement with the contractor for the execution of a building project, the principal then becomes a purchaser or lessee on the market for new buildings. His influence on the layout of the environment is thereby greatly reduced, and may even disappear altogether.

Where the process functions to be fulfilled by the principal are diminished by changes in the production structure, the result is a diminution of knowledge necessary for the fulfilment of all functions or the assessment thereof.34)

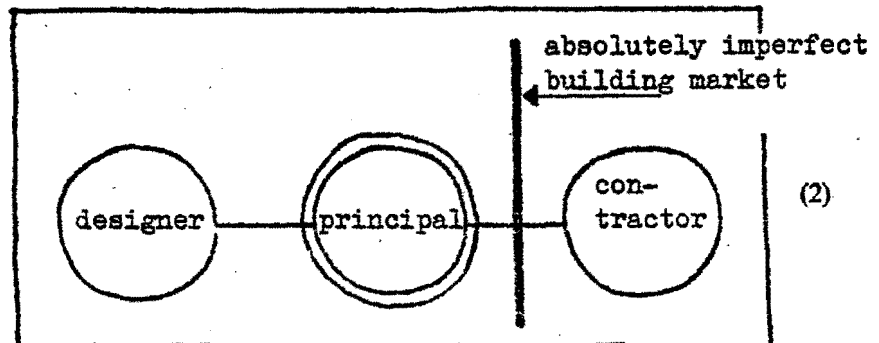
If the principal, as the user or the user's representative, is to be able to continue efficiently to play his part in the building process, he must be able to prepare his orders in such a manner that these can be placed on the open market if, for one reason or another, this should be desirable. At the same time, he must not merely be an equal partner. The principal should also be capable of shouldering the responsibility for his contribution to the built environment.

While the activities of the principal bear a clear relationship with the concentration and use functions, those of the contractor are in principle directed only at the construction and process functions. Initiative and design - both of which belong to the process functions - establish the relationship between the goal functions and the means functions. The starting point for these, however, lies in the goal functions. (See Fig. 3)

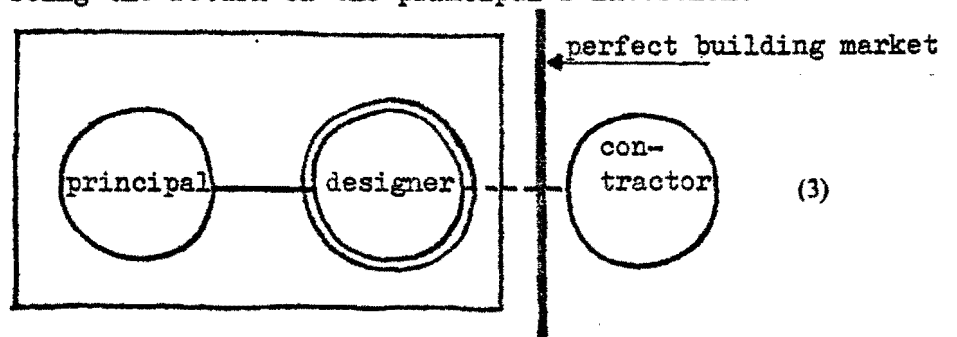
Fig. 3 Three of the various ways in which design and execution can be linked (three principals with differing goals)



Design linked to execution of the building process of the contractor



Design based on use and concentration functions and on the building process, the ultimate aim of building being the return on the principal's investment



Design based on use and concentration functions, the ultimate aim of building being the interest of the user

N.B. The building market is perfect when all contractors who can undertake the execution are enabled to compete for the order.

In the light of this, the author is of the opinion that, in the area of urban renewal, as in others, the criticism concerning the absence of a division between the taking of the initiative and the design cannot be sustained and must therefore be rejected.

In his absorbing paper 'Future problems facing the designer,' which was published last year, Sir Ove Arup, dealing with the division between order and design, rightly ended by saying: 'I hope I have made clear, brief and design cannot be separated, and scientists and designers must be brought in as advisers, to decide why we build and what we build. This is a much more difficult and controversial question than how to build.'³⁵⁾

The initial gap between the demand for, and supply of, building capacity, to which Myrdal pointed, has had the effect of making the means, i.e. building techniques and the building process, a focal point of interest for many years past. As a result, it would appear that the goal has become the most efficient method of executing the building process. The study of urban renewal affords an opportunity to reflect on this development as well.

Choosing amidst uncertainty

The motive for this study of the economic aspects of urban renewal lies in the completion in 1973 of the 'Stokstraat en omgeving' (Stokstraat and environs) scheme in Maastricht. An important economic aspect of this scheme - which was originally tabled in the late 1930s - was that its execution would contribute to reducing unemployment. When, much later, the plan was implemented, unemployment had ceased to be a burning issue; this, however, could not be said of anxiety concerning the maintenance of employment in the building industry. This anxiety was the principal factor which led ex-minister In 't Veld to write his book 'Krotopruiming en vernieuwing van bebouwde kernen' (Slum clearance and renewal of built-up areas), which was published in 1953.³⁶⁾ The replacement of old buildings as a means of maintaining continuity of employment in the building industry was again referred to in memoranda issued in the 1960s by ministers who then headed the Ministry of Building.^{37,38)}

The maintenance of employment in the building industry by means of slum clearance, as an element of urban renewal however, is a slogan which dates from the time when the complexity of the problem of urban renewal had yet to be recognized. The current slogan 'Without demolition there can be no building' typifies the importance accorded to the replacement of old structures as a means of maintaining continuity in the utilization of the building capacity which is now available in the Netherlands. Donnison, referring to England, has also pointed to the need for large-scale replacement in order to maintain the level of production.³⁹) It is, however, not the case that building capacity primarily determines urban renewal, but that urban renewal determines the building capacity employed for it. In order to understand this productive capacity, and in particular the labour capacity, it will be necessary to know more about urban renewal.

Urban renewal is an extremely complex problem of choice. The basis for this choice is made up of the demands to be imposed on the city. Partly because of the conflicting nature of the interests of those concerned, these demands are not clearly defined. In a number of instances, voices have been heard urging that as little as possible be changed until such time as there is a clear insight into the manner in which the existing structures should be renewed. The question then arises: What is the minimum which must be done in order to retain or regain the functions of the city and its component parts? Viewing urban renewal from this angle results in a minimal building task.⁴⁰) Other voices stress the unacceptability of a 'minimum' approach, maintaining that the standards employed to measure existing structures must be higher than those maintained by the average user.

In the present situation, there would appear to be an absence of usable standards derived from the goal functions. This situation demands an adequate approach to the productive capacity. In this, it is desirable that the growth of that capacity be stimulated in such a manner as to produce the widest possible range of choices in regard to urban renewal. In this context, the possibility of retaining the finelace layout of the old cities merits special attention. Here, building capacity which utilizes generic techniques can effectively be employed on a limited scale. In this case, it is not the size of companies which determines the extent of the scale, but the techniques.

The users - who, fortunately, are concerning themselves more and more with urban renewal through the medium of action groups - must increasingly be given opportunities to participate in the choice. The organs of government - individually or in groups - can, as principals co-ordinating the renewal of the built environment, fulfil an important role in making possible the choice. The task of achieving this stems from the planning of urban renewal. How to fulfil this task efficiently is something which many principals have still to learn. Partly because of its nature and the scanty knowledge which exists concerning it, it cannot be anticipated that urban renewal, which is directed towards replacement and improvement - will lead to production on a large scale. Old, historic cities have a habit of resisting this type of approach. The following quotations from Sibyl Moholy-Nagy are applicable in this context: 'Cities, like men, are embodiments of the past and mirages of unfulfilled dreams. Most decisive of all, cities, like mankind, renew themselves unit by unit in a slow, time-bound metabolic process.' 'The makers of man-made environment are at a crossroad. They can destroy the city as the matrix of man or renew it.'(41)

References

- 1 Committee for the study of the financial consequences of slum clearance and urban reconstruction, Urban renewal: report submitted to the Minister of Housing and Town and Country Planning on 21st July, 1971, The Hague, 1972, p.8. On page 10 of the report, the committee defines a number of concepts as follows:
 - urban renewal: improvement of a built-up area or a part thereof by slum clearance, reconstruction, rehabilitation, or a combination of these;
 - reconstruction: improvement of the town planning structure of a built-up area or a part thereof;
 - slum clearance: improvement of a built-up area or a part thereof from the point of view of housing;
 - rehabilitation: the improvement of a built-up area or a part thereof by improving existing buildings and environs, the basic aim being to retain as far as possible the social and economic structure of the urban area concerned.

- 2 A notable increase in the number of theoretical slums occurred in the 1960s. This increase was governed by the definition then employed and by the demands imposed in regard to the life of dwellings. To proceed from a life of 50 years - which figure was still accepted as correct in the memorandum 'New living in old districts' drawn up by the parliamentary group of the Dutch Labour Party and dated 9th January, 1969 - implies that, in the period 1970 - 2000, as many dwellings will have to be replaced as are added to the stock of dwellings. On the basis of views which have gained currency in the space of a few years, it cannot be anticipated that the corresponding programme of demolition and replacement - more than 90,000 dwellings per year - will be realized. In the 1950s and 1960s the annual figure averaged 13,000 dwellings.

- 3 Asa Briggs, 'The sense of place,' published in Smithsonian Annual II, The Fitness of Man's Environment, Washington, 1968. Asa Briggs states, among other things, that: 'The problem of city identity can be fully understood, only if we pass from artistic expressions of highly distinctive experience (often shot through with myth and symbol) to manifestations of common experience - to the identification of people with their environment and to the process by which they become so identified or fail to become identified.' (p.p. 88, 89).

- 4 R. Das, S.A. Leeftang, W.L.B.J. Rothuizen, Op zoek naar leefruimte (In search of living space), Amersfoort, 1966, p. 61.
- 5 Wilfred Burns, New Towns for Old, The Technique of Urban renewal, London, 1963.
Burns gives the following definitions (p. 14):
 - Redevelopment is taken to mean the process which involves clearance of property and the building of new structures according to a definite preconceived plan with a layout different from that of the area before redevelopment was undertaken.
 - Rehabilitation is taken to mean the process of putting existing buildings or existing areas of development back into a worthwhile state after they have become outdated and unsatisfactory.
 - Urban renewal is taken to mean the process by which a large area of a town - say, the whole town centre - slowly renews itself and thereby gradually changes its character to fit in with the needs of contemporary society. It is distinguished from the radical changes of redevelopment (which may, of course, take place in a part of the town centre as part of the whole programme of urban renewal) as well as from the status quo of preservation and rehabilitation.
- 6 Martin Anderson, The Federal Bulldozer, A Critical Analysis of Urban Renewal, 1949-1962, Cambridge, Massachusetts, 1964, p. 147. 'As signs developed indicating that urban renewal by clearance was not working effectively, more emphasis was placed on an attempt to rehabilitate existing structures. Perhaps the primary spur behind this shift in emphasis was the growing amount of political opposition to large-scale clearance programs which made many thousands of people homeless.'
- 7 D.F. Medhurst and J. Parry Lewis, Urban Decay, An Analysis and a Policy, London, 1969, p. 115.
- 8 A. Hendriks, Van wederopbouw naar ruimtelijke ordening (From Reconstruction to Town and Country Planning), Rotterdam, 1965, p.p. 21-22.
- 9 Max Frisch, Vorwort; Gody Suter, Die groszen Städte, Was sie zerstört und was sie retten kann (The Big Cities, What ruins them and what can save them), Bergisch Gladbach, 1966, p. 8.

- 10 P. Dufau, *Ce dont l'homme a besoin (What Man needs)*, *La Nef*, April-July 1965, no. 22, Paris, 1965, p. 54.
- 11 Robert Gutman, Ed., *People and Buildings*, New York-London, 1972, p. XI.
- 12 Lutz, referring to the unsatisfactory theoretical basis, said, among other things: '..... I contend - and I am prepared to prove it in detail - that there is hardly a field in the scope of the social sciences which needs research so urgently and which is so desolate as far as research into the problems of big cities and districts is concerned. In the past years a real syndrome has developed from ill-judgement of potential owners, barriers to systematic fundamental research, retreat of wise people out of this field, where one cannot earn laurels nor do sensible work, that it is of the greatest importance to create favorable conditions for broad and continuous scientific work.'
- B. Lutz in *Polis und Regio. Von der Stadt- zur Regionalplanung*, Basel, 1967.
- 13 Harris states: 'Modern urban planning is to an extent a focus of present-day unease over the future of man. The scale is one which bridges the gap between the human content of disaffection suffering, and the technology of engineering together with the technocracy of bureaucratic government. The anticipatory role is forced upon it; we feel the cold breath of disaster behind us. Both in our nations and in our cities, we are quite plainly entering a period when the solution of social problems is becoming more pressing in many arenas than the solution of material and technical problems.'
- Britton Harris, *Foreword: Decision-Making in Urban Planning* (Ed. Ira M. Robinson), Beverly Hills, California-London, 1972. p. 11.
- 14 Commissariat Général du Plan, *Plan et Prospectives, Les villes, la société urbaine (Plan and Prospects, the Cities, the urban society)*, Paris, 1970, p. 122.
- 15 J. Remy, *la Ville: phénomène économique (The City: economic phenomenon)*, Brussels, 1966, p. 13: 'This analysis, which is aimed at research into the economic functions of the urban phenomenon, will be guided by the question: Does the city possess an economic rationality? In other words: Is the city only to be considered as a territory in which theories worked out for other elements of the economic system are being applied or are we facing an original economic unit that cannot be traced back to any other? If the latter should be the case, it would merit a specific theory, just as the money, the enterprise, the market.'

- 16 The components distinguished by McLoughlin - activities, spaces, communications, channels - could serve to describe the concentration functions. J. Brian McLoughlin, *Urban and Regional Planning, a Systems Approach*, London, 1969, p.p. 153-156.
- 17 K. Lönberg-Holm and C. Theodore Larson, *Development Index*, Ann Arbor, Michigan, 1953.
- 18 Eduardo Torroja, *Philosophy of structures*, English version by J.J. Polivka and Milos Polivka, Berkeley and Los Angeles, 1958, p. 3.
- 19 A. Hendriks, *De prijsvorming in het bouwbedrijf* (The Determination of Prices in de Building Industry), Rotterdam, 1957, p. 146 et seq. The acceptance of the risk is inherent to the five process functions. Insofar as these functions are transferred, the principal can determine, by the manner in which the risk is spread, the extent to which this will apply to the acceptance of the risk. (p. 156).
- 20 A.Hendriks, *Bouwnota '62*, Rotterdam 1962, p.p. 70-71.
- 21 Vide C. Goedhart, *Financiering van overheidsinvesteringen: Structurele en conjuncturele aspecten* (Financing of government investments: Structural and economic aspects), published in Finance issue of *Bouwrecht*, Alphen a/d Rijn, May, 1967, p. 7.
- 22 *Bouwnota '62* (Building Memorandum '62), p. 49 et seq.; EIB, *Woningbouw en werkgelegenheid* (Housebuilding and employment), Amsterdam, 1972, p. 14 et seq.
- 23 *The Economist*, September 11, 1971.
- 24 'For the building industry, those price and wage increases result in rises in building costs of between 10 % and 15 % per annum,' said B.J. Udink, Netherlands Minister of Housing and Town and Country Planning, in an interview published in *Bouwwereld*, 1st October, 1971, p. 26.
- 25 In the 1950s and 1960s the rise in the volume of building production led to an equal rise in building prices. A substantial proportion of the increase must be attributed to inflation.

- 26 Among those who in 1965 criticized developments in regard to building techniques was J.J. Broeze, then Professor of Fuel and Power Supply Engineering at the Delft University of Technology. In a paper entitled 'Techniek en technicus in de wereld van heden' (Technique and technician in the world of today), published in *Wijsgerig perspectief op maatschappij en wetenschap* No. 2, Amsterdam, november, 1965, in which he reviewed the present phase of general technical development, Broeze referred in parenthesis to what he saw as the failure of the building industry to keep up with this development. He wrote: 'Under numerous influences the building industry, one could regret, appears alone in not accepting drastic modernization, at least in this country.'
- 27 International Council for Building Research, Studies and Documentation - CIB, *Towards Industrialized Building*, Amsterdam - London - New York, 1966, p. 5.
- 28 A.Hendriks, *De prijsvorming in het bouwbedrijf*, p. 45 et seq.
- 29 A. Hendriks, interview published in *TA/BK, tijdschrift voor architectuur en beeldende kunsten* (journal of architecture and plastic art), Vol. 39, 1972, No. 9.
- 30 Cf. Bauausschuss der Schwedischen Industrie, *Der Neue Baumarkt, Produktverantwortung, Konkurrenz, Kontinuität*, Stockholm, 1970, in particular Section 6: 'Marketing'.
- 31 Philip Drew, *Third Generation, The Changing Meaning of Architecture*, London, 1972, p. 15.
- 32 The theory of architecture, including that of functionalism, has also contributed to this.
- 33 Vide 'Amsterdam, Rapport inzake gemeenschapsbouwbedrijf,' *Gemeentebld* 1968, Appendix N, p. 45 et seq.
- 34 'Only when private firms of consulting engineers and architects are regularly employed by the government can they - partly by reason of their involvement - acquire the know-how necessary to compete on the international market.' This view was expressed by F. Sonneveld, president of the Koninklijke Nederlandse Heidemaatschappij, and appeared in the 15th September 1971 issue of *Pt/Aktueel*.

- 35 Sir Ove Arup, Future problems facing the designer, Philosophical Transactions of the Royal Society of London, A 272, 1972, p. 8.
- 36 J. in 't Veld, Krotopruijing en vernieuwing van bebouwde kernen (Slum clearance and renewal of built-up areas), The Hague, 1953, p. 135.
- 37 'Moreover, the expectation that there are no grounds for fearing unemployment on the scale of the 1930s, in either the short or long terms, should be widely shared. Section 2 shows that employment throughout the building industry, in particular in the housing sector, is assured for years to come. In the light of the present backlog and the growth of current demand for building works, the prospects for employment in the building industry are more favourable than in practically any other industry.
There is therefore no reason to fear anything approaching large-scale unemployment in the building industry; on the contrary, in spite of all the measures proposed in this memorandum, the need for building will continue to outstrip the building capacity for a considerable time. In this connexion, one has only to think of the immense need for dwellings to replace outdated dwellings.'
P. Bogaers (Minister of Housing and Town and Country Planning), 'Nota betreffende een pluriform en expansief bouwbeleid (Memorandum concerning a pluriform and expansive building policy), The Hague, 1963, p. 13.
- 38 'The point having been reached at which the elimination of the greater part of the housing shortage can be foreseen, the housing programme can only be maintained at or about the current level if replacement on a sufficiently large scale is undertaken in good time. However, as a considerable degree of replacement is necessary, a lower rate of production will not suffice in the medium term.'
Memorandum: 'De toekomst van het oude woningbestand' (The future of the stock of old dwellings), issued by the Netherlands Minister of Housing and Town and Country Planning, The Hague, 1968, p. 9.
39. D.V. Donnison, The Government of Housing, London, 1967, p.p. 250 and 376.
- 40 EIB, Dapperbuurt, een bijdrage tot de meningsvorming (Dapperbuurt, a contribution to the formation of opinions), Amsterdam, 1972, p. 1.
- 41 Sibyl Hoholy-Nagy, Matrix of Man, London, 1968, p.p. 11 and 282.

ANNEX

Building production and building stock (built environment)

- | | | | |
|----|---|-----|------------------------------------|
| 1 | $B' = \Delta Is + \Delta Ss$ | 1a | $Is + Ss$: built environment |
| 2 | $\Delta Is = \alpha_t \cdot B'$ | | |
| 3 | $\Delta Ss = Sw' + So'$ | | |
| 4 | $So' = \beta_t \cdot B'$ | | |
| 5 | $Sw = \frac{1}{n} \left(\frac{Bv}{D_n} - \frac{Bv}{D} \right) + R_{1w} + R_{2w} + O_w$ | | |
| 6 | $B = U + R_1 + R_2 + O$ | 6a | $B' = U$ (net building production) |
| 7 | $B = V$ | | |
| 8 | $V \geq Ca$ | 8a | $B \leq Ca$ |
| 9 | $Ca = Ma + T + A_2 + Mt$ | 9a | $A_1 = Ma + T$ |
| 10 | $F = Ca + G + P_1$ | | |
| 11 | $F = \gamma_t \cdot I$ | 11a | $I = Y - C - X + M$ |
| 12 | $F = P$ | 11b | $I = S + M - X$ |
| 13 | $P = P_1 + G + Ca$ | | |

P_1 : starting point in goal functions (p. 45)

- . concentration functions
- . use functions

linked through:

Ca : starting point in means functions

- . construction functions
- . process functions

- . initiative
- . design

Key

B	: building production	Ca	: building capacity
Is	: infrastructure	$\alpha_t, \beta_t, \gamma_t$	: parameters
Ss	: superstructure	Mt	: materials
Sw	: production of dwellings	T	: techniques
So	: production of other buildings	A_1	: productive capacity
n	: number of years	A_2	: labour capacity
Bv	: size of population	F	: finance
D	: mean occupation density	G	: land
R_{1w}	: replacement of dwellings	P_1	: design
R_{2w}	: improvement of dwellings	P	: plan (realized)
O_w	: maintenance of dwellings	Y	: national income
V	: demand for building production	C	: consumption
U	: expansion (net)	I	: investment
R_1	: replacement	S	: savings
R_2	: improvement	M	: imports
O	: maintenance	X	: exports
So'	: expansion		
Sw'	: expansion		

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prepared by A. Hendriks