Bouwen in beton. Experimenten in de volkshuisveting voor 1940
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The developments which occurred in Dutch public housing before 1940 have previously been described mainly in relation to architecture. The administrative, business and technical aspects have been hardly considered. These aspects include the experiments in building houses in concrete instead of bricks which were carried out shortly after the First World War. The starting point for the present study is the best known of these experiments, the Amsterdam neighbourhood of Betondorp, the origins of which are described in Part I. In Part II, after a general introduction about the use of concrete in architecture and public housing and a review of similar projects in Germany, Great Britain and Belgium, the other experiments in the Netherlands are discussed.

PART I

After the appointment of the Social Democrat, F.M. Wibaut, as Alderman for Public Housing in 1914, the City of Amsterdam pursued a strong public housing policy despite difficult circumstances. Not only was the city faced with strongly rising construction costs while financial support from central government was gradually reduced, but the extension of the city was giving rise to problems. The polder municipality of Watergraafsmeer on the east, in particular, was violently opposed to its long-projected incorporation into the city. By its approval of the 3,500 Dwelling Plan in 1915, the City of Amsterdam participated directly in housing production for the first time, besides housing societies and private builders. A municipal Housing Department was set up under A. Keppler as Director. Four widely separated sites in West, North and East Amsterdam and – remarkably enough – Watergraafsmeer (then still outside the city boundary), for the implementation of the municipal housing plans. In contrast to the south of Amsterdam, where the architect, H.P. Berlage, had prepared an extension plan, there was as yet no extension plans for the other sectors of the city and planning was carried out on the basis of local plans. Under these circumstances, Amsterdam-Noord (the part of the city north of the River IJ) unintentionally became a testing ground for town planning and housing experiments. The first garden village (Tuindorp Oostzaan) was built here in 1920-25. At the same time, the first experiments were being conducted with cheaper building methods, such as ‘repetition building’ in the Van der Pek neighbourhood, and the building of ‘semi-permanent’ dwellings of ‘light construction’ (Vogeldorp and Disteldorp). Because wages and raw material costs were continuing to rise, a rest was also carried out, following the example of Great Britain and Germany, in the use of concrete for house building, for which unskilled labour could be used. The site was near the Castorp plein. The results were encouraging enough for an experiment on a larger scale to be attempted. The site for this project was a part of the Watergraafsmeer, chosen after the latter had been incorporated into the city.

In order to emphasise its independence, the municipality of Watergraafsmeer had already commissioned the architects, P. Vorkink and J.Ph. Wormser, to prepare an extension plan for the whole of its territory in 1904. The municipality adhered to this grandiose plan until its annexation in 1921, without incidentally carrying out any building
schemes itself. The City of Amsterdam, which had purchased a large piece of land in the Watergraafsmeer in 1917 in order to overcome its land and housing shortage, was consequently forced to adopt Vorkink and Wormser's subdivision plan for that site. The detailed town planning scheme was worked out by the architects, J. Gratama and G. Versteeg, who also worked for two Amsterdam housing societies (the AW and Eigen Haard), to supplement the municipal housing of Amsterdam in that area.

Under the constraints of the increasing economies forced on it by the state, the Amsterdam City Council finally decided on 22nd July 1922, after considering several alternatives, to build 900 dwellings in concrete using various systems. Three variants were chosen of each of the three possible methods of concrete construction: cast concrete, prefabricated concrete and concrete blocks, with a different architect being responsible for each of the variants. The nine systems: Korrelbeton, Kossel and Non Plus; Bims BetonBouw and Bron, Hunkenmoller; Bredero, Isotherme and Wingent, were supplemented by the Dorlonco concrete frame construction system. The great diversity of concrete systems not only helped to spread the technical risks, but guaranteed the desired architectural variety. In addition, decoration in black pitch and colourfully painted woodwork were used to reduce the dreaded uniformity. The planned square, which had a somewhat out-of-centre location and was a relic of Vorkink and Wormser's extension plan, was deliberately left open for the building of a number of communal facilities at a later date. Both the town planning and architectural design for these were prepared by Dick Greiner on the basis of Gratama and Versteeg's layout of 1918. The buildings grouped around the Brink (= village green) included, besides shops with dwellings over, a community centre, a library and ten garages. They were all built in concrete and the whole complex was appropriately nicknamed Betondorp (concrete village). Greiner also designed an ornamental tower near the Brink to serve as a landmark.

Because of the anti-clerical views of the socialists, which governed the planning of this garden village, no churches were projected for the Watergraafsmeer garden village, although space was left for general cultural facilities, including five schools. With one exception, the Betondorp experiment was both an architectural and a structural success and attracted international attention. No more than the concrete experiments elsewhere in the country, however, was Betondorp able to dispel the deeply rooted preference for brick housing.

PART II

Although reinforced concrete had been introduced into the Netherlands shortly before 1900, its application until 1914 was limited mainly to civil engineering works and factory buildings. House building was nearly always done by relatively small contractors who were not willing or able to invest in projects larger than 50 or 100 dwellings, for which the use of concrete was uneconomic. The country was not yet technically and economically ready for the industrialisation of the whole house building process in 1920, although the prefabration of elements such as doors and windows was slowly gaining ground. Moreover, the majority of housing societies were still antipathetic to the introduction of industrialised house building, because it would limit their freedom of design. The 'Standardisation Conference' of 1918 clearly shown that only a few architects were ready to apply the standardisation of whole dwelling types. H.P. Berlage was one of the few in favour of doing so. He not only showed how town planning could be used to introduce variety into the scenery of the street, but also pointed out that the use of reinforced concrete would introduce a new architectural era. In 1921 he had already collaborated in designing the 'cast house' at Santpoort, which afterwards proved to be an important link in the development of ideas about the application of concrete in house building. J.B. van Loghem and J.J.P. Oud also contributed to this creation of ideas. In practice, however, there was little interaction between the ideas and the realised works.

The fact that various experiments in building houses with concrete were nevertheless carried out in the brief period between 1920 and 1925 was largely due to the housing shortage at that time, the shortage of materials, the high wages paid to bricklayers and unemployment outside the building industry. These were circumstances which partly arose from the First World War. A striking feature is the intensive exchange of experiences which took place, both within the Netherlands and with neighbouring countries, particularly Great Britain and Germany. Despite the almost identical background to all these experiments, of which the Betondorp in Amsterdam was only one, the result was always different, because of differences in policy and local conditions. A common feature, however, was the preference for the building of low rise housing in concrete, because the projects mostly employed non-reinforced, hollow concrete walls. Moreover, the garden city concept appealed to many architects. On the other hand, the building of exclusively single family houses was not economically feasible.

The largest number of concrete dwellings (1,300) was eventually built in Rotterdam, at various sites on the left bank of the Maas (South Rotterdam). The experiments enjoyed the particular support of the Social Democratic Alderman A.W. Heykoop and the Director of Housing, A. Plate. These two, however, came into conflict with the majority on the city council, partly because of their interest in concrete housing, and were forced to resign. Heykoop resigned because of criticisms of the quality of the proposed new dwellings in general (the 'Alcove Conflict') and Plate because of his attitude to the price comparison he was forced to make between brick and concrete building. Following visits to sites in Germany, two housing complexes were built using the Kossel cast concrete system. The designer was J. Hulshofen. In addition, the Dutch Isola system of concrete block construction developed by the 16B (Stulemeijer) was employed for the building of two other complexes. (A third project fell through because of intervention by the provincial government in Rotterdam's financial policies). The architect was J.M. van Hardeveld and his work earned high praise, both in the Netherlands and in the foreign architectural press. Although a further thirty privately-built Korrelbeton (granular concrete) dwellings were added to the Kossel complexes in 1930, some of them designed by the architect, W. van Tijen, most of these experiments had already been forgotten by then.
The municipality of The Hague carried out a small experiment in Scheveningen with the construction of eight pairs of semi-detached dwellings, using different concrete building systems, but the same architectural design. The latter was produced by the municipal architect, W. Greve, who was also responsible for the standardised formwork system bearing his name and employed in the Korrelbeton cast concrete construction method. A further four dwellings built using that system were later added to the complex. An experiment on a larger scale eventually did not go through, because of lack of support from the city council, which was biased in favour of the more traditional brick building methods. A further two complexes of middle class houses using concrete were built, however, without municipal support. These were the famous Daal en Berg Housing Society dwellings around the Papaverhof, by the architect Jan Wils (although the upper floors and the flats were carried out entirely in brick), and a series of private homes near the Bosjes van Poot. In general, however, it was the municipalities, encouraged by financial support from central government, which ventured on such building experiments.

The 242 concrete dwellings built by the City of Utrecht in the new neighbourhood of Ondiep near Zuilen using the Bredero (Olbertz) concrete block system were demolished a few years ago because of technical defects. They were clear examples of 'substitute building' for brick, which was expensive at that time, and their architecture was inconspicuous. Besides the housing shortage, unemployment relief work was an important motive for this experiment. Many unemployed cigar makers were able to find temporary jobs in the manufacture of concrete blocks. The Bredero company had produced a publicity brochure in connection with this project which influenced decision making in other municipalities.

This applied to Den Bosch, for example, where there was also a lot of unemployment among cigar makers and where a special Emergency School was opened to retrain the unemployed as building workers. These projects, which marked the municipality's first incursion into the housing field, were greatly encouraged by the Catholic Party Alderman, M. Krijgsman, who wanted to combat the severe housing shortage in the very run-down inner city as well as fight unemployment. Seven small complexes, with a total of 350 dwellings, were built using the Bredero system in the city's first extension areas. The eighth complex, however, was built by the competing firm of ICB, again using concrete blocks.

In other places, too, such as Teteringen (near Breda), Groningen, Oss and the South Limburg mining district, houses were built at this time using concrete, whether or not intended for temporary use, but all as an emergency measure. The Zeeburgerdorp in Amsterdam can be added to this summary. It was built in 1925-26 to the plans of Dick Greiner, in the same material as the buildings round the Brink in Betondorp (granular concrete). This 'village', which no longer exists, was built to house 'a-social families', for whom separate housing complexes were built in many municipalities in the 1920s as a means of training them for integration into society.

The challenge which concrete presented to the architect as a new material was scarcely answered in the field of mass housing. The fact that house-building experiments with concrete took place during only a short period was related to the special circumstances in the building industry at that time, when there was stagnation in private building, and to government financial policies to deal with those circumstances. The experimental building methods were abandoned as soon as brick building became possible again. Thanks to the close involvement of a numer of municipalities, these experiments nevertheless contributed to a broader reflection on the question of public housing and town planning in all their aspects. They helped to ensure that concepts such as 'standardisation' entered into the discussion about a large-scale, industrialised approach to housing construction, which did not really get under way in the Netherlands until after 1945 and in which many themes from the pre-war debates were revived.