Einen Vergleich zwischen den gemessenen Werten und den nach THORNTHWAITE, GARNIER und dem vorgeschlagenen einfachen Verfahren, wobei pET_g in den Gleichungen der Regressionsgeraden dann die gesuchte Größe pET ist, ermöglicht die Abbildung.

Die geringere Straffheit der Beziehung in den Übergangsmonaten ist wahrscheinlich bedingt durch Instrumentenfehler, denn in diesen beiden Monaten der untersuchten Jahresreihe treten besonders starke Streuungen auf.

Für eine einfache, in der Praxis der Wasserhaushaltsermittlungen ausreichend genaue Berechnung versprechen die aufgestellten Beziehungen des $(E - e)_{tm}$ zur pET_g eine gute Brauchbarkeit. Ihre Anwendung bleibt auf den Raum des südöstlichen Westafrika beschränkt auf Grund der besonderen Verteilung der hygrischen Jahreszeiten.

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SOME RECENT CHANGES IN MELBOURNE'S COMMERCIAL LANDSCAPE

With 1 figure

R. J. JOHNSTON and P. J. RIMMER

Zusammenfassung: Veränderungen von Struktur und Standort des Einzelhandels in Melbourne

Das anwachsende Realeinkommen weiterer Bevölkerungskreise, die immer stärkere Motorisierung und daraus folgende Verstopfung der Stadtkerne hat in amerikanischen Städten zu einem tiefgreifenden Standortwechsel des Einzelhandels geführt. Eine ähnliche Entwicklung setzte in Australien relativ spät ein, so daß erst während des letzten Jahrzehnts in den größeren Städten ca. 60 geplante Einkaufszentren in Anpassung an die veränderten Einkaufsgewohnheiten der Konsumenten eröffnet wurden. Am Beispiel Melbournes, der Hauptstadt Victorias, werden die funktionellen Merkmale geplanter und ungeplanter neuer Einzelhandelsstandorte untersucht. Bis jetzt wurden erst sechs geplante Zentren in der 2-Millionen-Stadt errichtet, doch ist eine größere Zahl für die nahe Zukunft vorgesehen.

Sales in the Central Business Districts of United States' cities have shown little increase in recent years,[1]) because these areas have lost their dominant position in the retailing of shopping goods which are bought by the whole population. Instead the Central Business Districts now provide specialty goods for the population of the whole Metropolitan Area, but mass-demanded shopping goods only for the residents of adjacent residential districts. The custom for shopping goods in other parts of the cities is being taken to the integrated regional shopping centres, in which department stores are establishing themselves in suburban areas.[2])

The regional centres are only the largest examples of planned shopping areas which are being established in American cities, and a threefold hierarchy of regional, community and neighbourhood is normally recognised.[3]) The first regional centre was opened in 1925 in Kansas City, according to HOYT,[4]) but their main period of expansion has been since World War II, with the growing dominance of the automobile. By 1958 there were 125 regional planned shopping centres in the country [5]) and San Francisco alone had 11 by 1959, one of them having estimated annual sales of \$60 million.[6]) The total number of planned centres of all sizes in the United States in 1959 was 4,500.[7]) The structure of these centres is markedly different from that of the unplanned centres, and the planned centres do not fit into the general hierarchical arrangement of intra-urban shopping centres.[8]) Stores are generally larger in the planned centres, there are fewer stores in each business type, and the location of the larger centres is strongly orientated towards the main expressways.[9])

Such developments have come much more slowly to Australia, although this country now has a very high rate of automobile ownership. There are signs of

[1]) H. HOYT: Sales in Leading Shopping Centres and Shopping Districts in the United States. Urban Land, September 1961.

[2]) J. E. VANCE JR.: Emerging Patterns of Commercial Structure in American Cities. Lund Studies in Geography, B, 24, 1962, pp. 485–518.

[3]) J. SIMMONS: The Changing Pattern of Retail Location. University of Chicago, Department of Geography, Research Paper 92, 1964, p. 106.

[4]) H. HOYT: Recent Distortions of the Classical Models of Urban Structure. *Land Economics*, 40, 1964, p. 201. SIMMONS, op. cit. p. 102, claims that the first regional centre was opened only in 1950.

[5]) HOYT, op. cit., 1964, p. 202.

[6]) VANCE, op. cit., p. 510.

[7]) SIMMONS, op. cit., p. 103.

[8]) B. J. L. BERRY: Commercial Structure and Commercial Blight. University of Chicago, Department of Geography, Research Paper 85, 1963. pp. 60–61.

[9]) SIMMONS, op. cit., pp. 111–116.

similar trends to the American experience in Central Business District sales,[10]) but in 1965 there were only six planned shopping centres in the Melbourne Metropolitan Area, which has a population of over 2 million, and only one of these would compare with the American regional centres. This paper reviews the situation at the present time and indicates the major differences between the planned and unplanned centres.

A common feature of nearly all of Melbourne's unplanned shopping centres is their length (for distances up to one mile) and remarkably little depth along intersecting streets. The narrowness of the "string" streets and the presence of tram-lines on many lead to problems of parking and pedestrian safety. However, the pedestrian-traffic conflict is overcome in the planned centres where shopping areas are set aside as pedestrian precincts.

The unplanned centre has grown up in a fortuitous and haphazard manner, there being no control over the location and type of shops within them except for general business laws. Many shopkeepers own their premises in unplanned centres, but in all except one of the planned centres, the shops are leased from a developer, who exerts strict control on the type and location of shops. At Melbourne's biggest planned centre, Chadstone, the developer owns the largest department store, and rents for the other shops are determined according to their individual turnover, which must be disclosed under the leasing agreement. Most developers do not allow more than one or two establishments (single retail or service stores, with one manager and one location) of any one business function (a characteristic kind of establishment with recognizable pattern of goods, production function and services) within their centre, although several have found that it pays to have competition in certain lines, particularly food.

The existing planned centres (Fig. 1) fall into three main categories according to their mode of origin: –

(a) Those serving newly-developed suburban areas: Forest Hill, Parkmore, The Mall and Thrift Park.

(b) Those which are additions to existing unplanned centres: Arndale.

(c) Those representing a decentralization of city centre functions to the suburbs: Chadstone and Forest Hill.

Forest Hill has been included in groups a and c because it appears to be partly in both.

In all of the planned centres except The Mall the shops are still owned by the developer so that he can control change and growth in the centre, and if necessary eject non-conforming businesses. The Mall was opened in 1958 by the State Housing Commission to service a large new estate which was the 1956 Olympic Village. Here the individual shop-sites were sold to developers for a specific business function. Covenants restricting the type of functions, however, lasted for only two years. The eventual de-restriction,

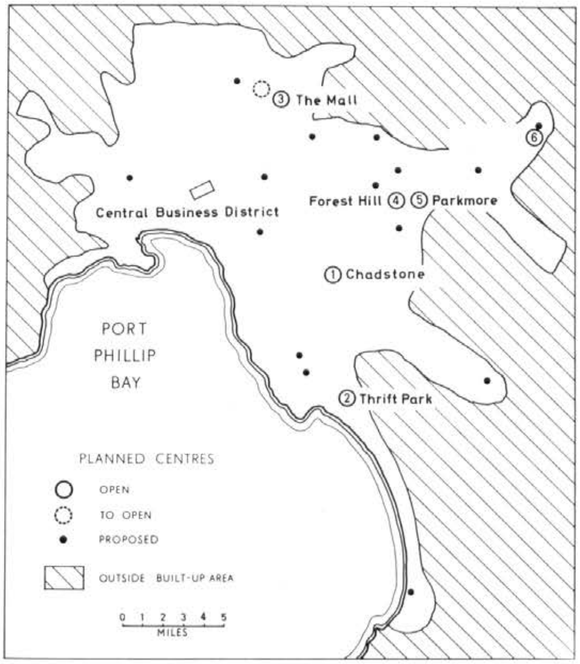

Fig. 1: The Distribution of Existing and Proposed Planned Centres in Melbourne

coupled with the lower consumer incomes in the area served by the centre, has created a different business structure in The Mall compared with other planned centres (see below).

The common features of the business structure of the planned centres becomes evident when they are compared with the mean for unplanned centres in Melbourne which have the same number of functions or establishments (Table I).[11]) Perhaps the most outstanding feature is that all of the planned centres have at least one large store (department, variety or supermarket) in contrast to all of the unplanned centres listed which are composed only of small shops. Indeed, it is only because of their planned development that centres as small as Arndale, with only twelve establishments, can support such establishments. Conversely in the food and convenience goods group (including newsagents, hardware and chemists) there are many more examples of each function in the unplanned than in the planned centres. In the latter the number of functions is the same but there are fewer establishments giving powers close to a monopoly to some of the establishments. Thus, at Chadstone there are two butchers' shops, compared with six, nine, or eleven in the three unplanned centres with fifty four functions. In the clothing and "other retail" categories the number of functions in the planned centres is usually larger than in their unplanned counterparts, though the ratio

[10]) R. J. Johnston: Sales in Australian Central Business Areas, 1956–57 – 1961–62. Australian Geographer, 9, 1965, pp. 380–381.

[11]) The data for the unplanned centres was obtained from the survey made for R. J. Johnston: The Distribution of an Intra-Metropolitan Central Place Hierarchy. Australian Geographical Studies, 4, 1966, pp 19–33.

Table 1: Comparison of planned and unplanned Centres
Business Types

	A		B		C		D		E		F		G		Total		F : E
Centre	F	E	F	E	F	E	F	E	F	E	F	E	F	E	F	E	Ratio
Chadstone	3	6	10	17	6	14	15	20	8	11	9	17	1	1	54	85	1:1.6
54 F	1	2	12	59	8	27	12	20	12	44	7	22	2	2	54	176	1:3.3
85 E	0	0	12	37	5	10	8	11	9	15	5	9	3	3	42	85	1:2.1
The Mall *	2	3	9	27	8	16	7	10	8	15	0	0	2	2	36	73	1:2.0
Forest Hill	3	4	10	18	7	23	11	16	6	10	1	1	0	0	38	72	1:1.9
36 F	0	0	12	33	4	8	6	9	7	15	4	9	3	3	36	77	1:2.2
72 E	0	0	11	27	4	9	8	12	7	13	5	10	1	1	36	72	1:1.9
Thrift Park	1	1	11	14	5	7	9	9	7	7	0	0	1	1	34	39	1:1.1
34 F	0	0	12	36	5	8	6	7	8	17	3	7	0	0	34	75	1:2.2
39 E	0	0	9	18	3	3	2	3	7	9	3	4	2	2	26	39	1:1.5
Parkmore	1	2	9	16	4	4	4	4	5	6	0	0	1	1	24	33	1:1.4
24 F	0	0	10	21	2	3	3	4	6	9	1	2	2	2	24	41	1:1.6
33 E	0	0	8	16	2	3	4	4	5	5	3	3	3	3	25	33	1:1.4
Arndale	2	2	3	3	4	4	3	3	3	3	0	0	0	0	14	14	1:1.0
14 F	0	0	8	12	1	2	2	2	2	2	0	0	1	1	14	19	1:1.4
14 E	0	0	7	8	1	1	0	0	3	3	0	0	1	1	12	14	1:1.2
Pinewood	0	0	9	14	1	1	3	3	5	5	1	2	0	0	19	25	1:1.3
19 F	0	0	8	16	2	3	1	1	4	6	1	1	3	3	19	30	1:1.5
25 E	0	0	8	13	1	1	2	2	4	5	2	4	0	0	17	25	1:1.6

Key to Business Types: A) Department, Supermarket and Variety; B) Food and Convenience; C) Clothing; D) Other Retail; E) Services; F) Professional Offices; G) Other.

For each centre the first row shows the business structure of the planned centre, the second the structure of unplanned centres with the same number of functions as the planned centre, and the third the structure of unplanned centres with the same number of establishments as the planned.

Abbreviations: F = functions E = establishments.

* As no unplanned centres the same size as Forest Hill exist this centre is compared with those of the same size as The Mall.

between functions and establishments varies but little between the two.

Within the next two functional groups, services and professional offices, the unplanned centres generally have many more examples than the planned. The number of barbers, coiffeurs, dry cleaners, shoe repairers and banks, which provide most of the personal services is much greater in the unplanned centres, particularly the larger ones. Apart from Chadstone, where there is a stockbroker among other professional offices, doctors, dentists, estate agents, solicitors and accountants are poorly represented in the planned centres.

Each planned centre has some degree of uniqueness as so few have been opened in Melbourne. For instance, Arndale is much smaller than Thrift Park or Parkmore but its different position, close to an existing large unplanned centre, has enabled it to develop more large stores. Alternatively, The Mall, which serves a lower income group than the other five planned centres, has more food and convenience goods establishments than are common in the planned centres. Generally, however, it can be concluded that:–

(a) the planned centres concentrate more on shops than offices. This is probably because the professional offices do not rely on window displays for custom so that location is not important to them. Many of them, also, cannot afford the high rents of the planned centres;

(b) within the shopping category there is greater emphasis on non-food and convenience goods within the planned centres, relative to their size;

(c) the planned centres have lower duplication rates for functions (as shown by the function: establishment ratio in Table I), particularly for food and convenience goods.

Between the planned centres discussed above and the multitude of unplanned centres within Melbourne, there are the "pseudo-planned" centres. These are located in many of the newer suburbs, attempting to overcome the problems of parking and "untidy" development. Land zoned for commercial use is laid out around a parking area by a developer, sometimes a municipal council, and the shop sites are sold to the highest bidder. In some of the centres the type of business for each individual shopping site is nominated, but as no covenants are imposed there is no restriction on the type of development which subsequently takes place.

The structure of one of these centres, Pinewood, is shown in Table I. Compared with the other centres listed in the table its intermediate position in business structure will be observed. Unlike the planned centres it has no large stores and it differs from the unplanned centres in its lower ratio of functions to establishments. The main difference is the smaller number of food establishments in Pinewood than in the older centres, an indicator of changes in the economic structure of the retail industry, but it still concentrates on the same type of function as the unplanned centre.

Finally the distribution of the existing and proposed planned centres shows an interesting dichotomy (Fig. 1). Apart from one proposal for a planned centre on the edge of the largest existing centre in the western suburbs, most of the retail development of this type is taking place in the southern and eastern suburbs. Here the development of shopping centres has been much greater than in the western suburbs, which are relatively closer to the Central Business District. In addition, the eastern and southern suburbs generally have much higher personal incomes and car ownership levels. The importance of the latter has been recognized in all of the planned centres, for example Chadstone has parking space for 3,000 cars, and is situated alongside a main highway, over a mile from the nearest suburban railway-station.

Many more planned shopping centres are proposed (Fig. 1). Development up to now, however, has been sluggish, mainly because the successful operation of large planned centres requires big department stores within them. Melbourne has only one such store ("the largest in the Southern Hemisphere") and until this firm moved into suburban shopping there was no finance available for the large American-style planned centres. The firm opened the Chadstone centre in 1960. It will be opening a second centre, Northland, in the north-east in 1966 and has started work on a third centre in the southern suburbs. The success of their pioneering venture at Chadstone has seen the introduction of the planned centre as a feature of Melbourne's commercial landscape, one that is bound to become more important in a city which already has three motor cars to every four dwellings.

"IS LEIGEN FÜNFF PERG IN WELSCHEN LANDT" AND THE HEREFORD MAP

G. R. Crone

I have read with great interest the illuminating paper "Is leigen fünff Perg in welschen Landt" by Dr. Gerhard Hard, which was published in *Erdkunde,* H. 4 (1965) 314–325. For some years I have been working on the sources of the places represented on the Hereford World Map which was drawn about the year 1300 (Crone 1954). Among them I have been able to indicate itineraries from the Antonine itinerary or the Bordeaux pilgrim, from the journies of the Apostle Paul, and from the campaigns of Alexander the Great. But for western Europe, the principal medieval source is undoubtedly the itineraries for the pilgrimage to Saint-Iago de Compostella. It would be impossible, or at least extremely laborious, to establish these sources from the Hereford Map as we know it to-day. Partly owing to the distorted outlines of the countries, and partly from lack of space and the mistakes of copyists, the positions of the town symbols are confused and in some instances very badly misplaced.

I therefore plotted their positions accurately on a modern map, having identified with certainty all but a few names. The result can be seen on sheet 10 of the portfolio published in 1954. Following on this, my identifications of the actual itineraries used for the Hereford Map are shown in a sketch map accompanying a recent paper in the *Geographical Journal* (Crone 1966). From this will be seen that the principal routes are (I) from northern France through Paris, Chartres, Tours, Saintes to Bordeaux and thence through northern Spain to Saint-Iago; (II) a route southwards from Paris via the Loire Valley and Nevers to Clermont Ferrand and thence through the Cevennes to Nîmes; (III) an alternative to (II) which made use of the Rhône valley to reach the south coast; this finally superceded the Cevennes route: (IV) a route across Southern France which corresponds to that noted in Pegolotti's merchant's handbook as that along which the English wool travelled on its way to the north Italian cities – Bourg, Fronsac, Libourne, Cahors, Montpellier (omitted from the Map).

The first route noted above is G. Hard's "nyder Strasse", and corresponds very closely with that shown on his sketch map *(Erdkunde* p. 315). The second is undoubtedly intended for the early medieval Via Regordane. This was apparently mainly a general and merchantile route. (Bautier 1960). There remain, however, a few names in present-day Switzerland and South-east France which I did not account for. These are Lausanne, Geneva, Arles, Narbonne, Toulouse, Auch and onwards. These undoubtedly form the 'obere Strasse' described so interestingly by G. Hard. It is true that the Hereford Map names do not begin with Maria-Einsiedeln. It must be remembered that the Map is some two hundred years older than the German pilgrim book of 1500 A. D., that is, it dates from a period when the German pilgrims along the 'obere Strasse' had not grown so numerous.

The more important respect in which the *Erdkunde* paper supports my suggestion is in relation to the crossings of the Pyrenees. Dr. Hard deals in some detail with the two main passes, called in the German pilgrims' hymn of 1500 runzenalle and monte cristein. The first is identified with the 'ports de Cize' on the route from St. Jean-Pied-de-Port and Roncevaux. This explains the insertion of Pamplona on the Hereford Map. The second refers to the hospice Santa Christina on the Somport d'Aspe pass, and similarly explains the appearance of Yake (Jaca) on the Map, Pamplona and Jaca both lying south of the Pyrenees on the route to Compostella.

It is interesting to see how the influence of these medieval pilgrimages, so strong on west European art and culture, extended also to the field of cartography.

Bautier, R. H. 1960. Recherches sur les routes de l'Europe médiévale. *(Bull. philol. hist. Comité Trav. Hist.* I, 99–143).