— the Dynamics of Lateral Urban Expansion¹

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Introduction

Bangkok has been extensively, but selectively studied. The bulk of studies refers to historical or sociological aspects of the city as a whole.² Micro—level studies of local areas and neighborhoods are, however, limited to slums³ and new suburban developments,⁴ to the neglect of other forms of urban life. No studies of socio—ecological change in the already urbanized areas of the city have been published in English. Particularly conspicuous is the absence of studies of one of the most ubiquitous and characteristic ecological features of the city—the numerous and variegated sois (lanes) which branch out of the major traffic arteries all over the urban area. In 1971, the number of sois was estimated at 2000 (Yinyeod, 1971); today there are probably many more. Virtually nothing, except for a few newspaper articles,⁵ is available on the sois of Bangkok. It was partly with a view to help close this gap that the study on which this paper is based was inititiated in 1981.

The aim of this paper, however, is not merely to describe a little noticed urban phenomenon; its wider theoretical aim is to conceptualize and illustrate the dynamics of soi development as a process of "lateral urban expansion," i.e. the growth of urbanization away from the main arteries of the city into their

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^{2.} For some of the principal studies of Bangkok see Sternstein (1982) and (1984); London (1980), Urbanization (1976), O'Connor (1979).

^{3.} See e.g. Morell and Morell (1972), Rabibhadana (1975) and (1977), Korff (1983), Boonyabancha (1983), Hongladaromp (1973), and Teilhet - Waldorf (1978); for a bibliography see Slum (1982).

^{4.} See e.g. Bunnag, 1978, Pramuanratkarn, 1979.

^{5.} See e.g. Yingeod. 1971.

hinterland.

The Process of Expansion of Bangkok

Bangkok expanded and still expands at a tremendous and accelerating rate.6 According to Pramuanratkarn (1979: 58-60), this expansion proceeded mainly along the major traffic arteries which extend to the north and the east of the city, engendering a "ribbon-development" (ibid: 58) in the outer areas of urban penetration. Bunnag (1978: 187) has similarly argued that: "Expansion in Bangkok generally takes the form of strip development into the rural areas along main roads or highways." Areas remote from the main arteries often remain in a rural or semi-rural state long after the emergence of these urban "ribbons" Since such areas usually lie between major arteries, they are "interstitial," even if the distances between the arteries, in the outer regions of the city, may be very large. Urbanization, however, does not stop with the penetration of ribbons or strips. These are eventually followed by a process of ever deeper expansion of the city into this interstitial hinterland, until the whole area is eventually urbanized, as are the mature, inner regions of the city. little attention has been paid to that process, whether in Bangkok, or for that matter, in other rapidly growing cities in the developing world.

The sois of Bangkok: Definition, Characteristics, and Variety

A soi is a lane or a "small street branching off a main road (thanon)" (Allison, 1978: 223). From the main roads such as Sukhumvit and Pahonyothin, which are two of the principal axes of penetration, branch off tens of sois, some short, some several kilometers long, which are the secondary carriers of urbanization into the interstitial areas. In the inner city, where urbanization reached a mature stage, the sois are by now often indistinguishable from the roads, creating with them an often irregular grid—like street pattern. Outside this central area, however, significant differences between the sois and the roads still persist; and the further out one goes, the greater these differences. The major roads are by now at least

^{6.} The urban area of Bangkok expanded at an accelerating rate, from 13km² in 1900, to 46km² in 1936, 96km² in 1958, 184km² in 1971 and 330km² in 1981 (Sternstein, 1982:90 - 91). Population estimates, especially for the earlier periods are unreliable (ibid : 93), but a similarly accelerating trend of growth can be established: the population of Bangkok in 1900 counted probably fewer than 500,000 inhabitants (Pramuanratkarn, 1979:50); by 1982 it reached about 5 million (Sternstein, 1982:92 - 93).

six lanes broad, straight, well constructed and well lit and drained mass—transit arteries intended to serve the huge volume of traffic characteristic of the city (ill. (1) — (2)). They are equipped with traffic—lights, pedestrian over—passes and traffic signs, intended to facilitate the flow of traffic. They are served by mass transport facilities consisting of air conditioned buses, regular buses, and, particularly at night, converted passenger trucks.

In contrast to the roads, the sois are generally much narrower, at most two or three lanes wide, and often irregular and poorly constructed, lit and drained. Initially, many were no more than dirt roads or paths along irrigation canals (klongs); while by now many are asphalted, they frequently lack sidewalks. During the rainy season, many sois are regularly flooded owing to inadequate drainage (e.g. Yingyeod, 1971). The sois were not built to handle heavy traffic, but the major ones are by now frequently congested, especially since the introduction of the one—way traffic system on the main roads in 1984 (ill. 3).

Though they all branch off into the hinterland of the main roads, the sois are far from homogenous. They differ considerably in length, ecological density and residential and functional heterogeneity. While a full typology of sois cannot yet be proposed, two polar types can be distinguished. The crucial variable for the distinction is the role of the soi in the wider urban traffic system: whether it leads to a dead end or connects between major arteries. Dead-end sois are generally short and quiet, less dense and functionally homogenous, mainly residential, areas (ill. (4)). Through—sois tend to be longer and noisier, denser Their greater accessibility makes them and functionally more heterogeneous. attractive to commerce, services and light industrial enterprises, which here coexist As they become heavily used secondary traffic arteries, with residential areas. however, they are shunned by higher class residents, who retreat into the quieter dead-end sois or the smaller sub-sois, branching off from the main soi.

The most important larger through—sois are served by the urban bus system. Other big sois have regular song—theo (pick—up truck) collective services, while shorter ones have merely taxis, samlor (motorcycle taxi) or just motorcycle—for—hire services. The shortest ones lack any means of public transport.

The urban street—network of Bangkok becomes sparser the further one moves away from the central, mature urban area into the outer regions of the city. The number of dead—end sois hence grows relative to the number of through—sois and the differences between the two become more and more marked. The

outer dead—end sois are frequently still undeveloped and of very short length, soon petering out into the countryside. The through—sois, because they are few, acquire considerable importance in the urban traffic network; their intensive use, in turn, leads to an increase in their ecological density and functional heterogeneity, differentiating them from the neighboring dead—end sois.

A soi, particularly a through—soi, is usually not just a simple, single lane. Rather, from the main soi secondary sub—sois (soi—lek) and tertiary sub—sub—sois branch off, frequently creating a maze of little streets and alleyways; most of these terminate in a dead—end; some sub—sois however, lead into the sub—sois of neighboring main sois, thus creating a secondary traffic system, paralleling the main road, but usually used only by those drivers who are familiar with the area.

Within the area of a soi, particularly a through—soi with its adjacent sub—sois, considerable internal ecological variation is usually found. Typically, the main soi is most heterogeneous and densely used, with shops and services lining the fronts of the houses. The sub-sois tend to be more purely residential, although they may harbor some workshops, small factories and other businesses, which are not dependent on the immediate access to passing pedestrians and vehicles. The density and functional complexity of the main through—soi also tends to vary along its length. It is greatest at the terminal sections, where it issues into a main road, and lowest in its middle sections: here the developed, urban area adjoining the soi is frequently quite narrow, resembling the ribbon pattern characteristic of the outlying areas of the principal roads. of sparsely settled, undeveloped land are thus frequently found in the interstices between main roads. These harbor a significant potential for large—scale urban development, once the area of the soi is hit by a new wave of urban expansion, emanating from the city center (Diagram (1)).

"Soi Sunlight": General Ecological Characteristics

The particular soi chosen for study—here to be called "Soi Sunlight" (Map (1)) — is a major through—soi, connecting two main urban arteries in the eastern part of Bangkok, Sukhumvit Road and Rama IV Road. It is located a few kilometers outside the central area of the city. Its length is 1.6 km. From the main soi issue more than 40 sub-sois and narrow walkways. From some sub—sois issue additional sub—sois, which at some points lead into the

neighboring sois to both east and west. Soi Sunlight, with its sub—sois and sub—sub—sois thus constitutes a complex and fuzzily bounded ecological sub—system of the city. The shape of this system, however, differs along the length of the area of the soi. Which sub-soi will link up with the neighboring soi and which will not is certainly partly determined by chance factors of historical development; partly, it results from natural causes — e.g. cast of the lower—middle section, a marshy area behind a slum blocks further communication; partly, however, it is determined by social factors — thus the backs of both slums were partly fenced off, presumably to prevent the slum—dwellers access to the better residential areas, located on sub—sois of the adjoining main soi.

Soi Sunlight is one of the most heterogeneous sois in the whole of Bangkok-which was one of the reasons for its selection for study. It comprises a bewildering variety of habitations, frequently coexisting at close proximity, and a variety industrial, commercial and institutional functions. The following short description of the main features of the soi cannot do justice to this variety.

In 1981, when this study was initiated, Soi Sunlight featured three local markets: one at each of its ends and one close to the middle of the soi; by 1984 the market at the upper end, on the corner of Sukhumvit Rd., was demolished to make place for new construction. The length of the main soi is lined with several hundred shops, offering a wide variety of goods and services; several dozen workshops and small industries are also located along the main soi and in some of the sub-sois; their number increases towards the lower section of the main soi. Business offices began recently to penetrate its upper section.

About a third down the main soi is located a major school complex, which creates a wedge between the upper, and middle and lower sections of the soi; there is also another, smaller school close to the lower end of the soi, and a fire-station. There are no other public services in the soi.

Much of the main soi, and many of the sub-sois are lined by shop-houses; between these and behind them are located residential areas. A small slum area (the "First Slum") consisting of densely built wooden houses is located in the upper section of the soi, close to Sukhumvit Road; a more extensive slum area (the "Second Slum"), consisting of more sparsely built wooden-houses and shacks is located in the middle and lower sections of the soi. This slum at present takes up most of the area to the east of the main soi, up to the marshy area (Map (1)); in the past it also extended into the area west of the soi, where its last remnants were demolished

by 1983.

The main soi is an asphalted street with sidewalks, fairly well lit at night, but badly drained. Consequently, it is frequently flooded during the rainy season, like many other sois in the city.

The soi has no bus or permanent song-theo services, but a great number of pick-ups serve the central school complex in the morning and afternoon hours. Samlors and, from 1983 onwards, motorcycles-for-hire, ply the soi and its sub-sois, from and to the two major roads.

The ecological and social development and present character of the soi is significantly influenced by its wider environment; the upper section is influenced by the middle-class residential and commercial services characteristic of the adjoining section of Sukhumvit Road; by its proximity to one of the city's major tourist hotel and entertainment areas located lower down on that road; and, most recently, by the expansion of CBD (central business district) functions from the central city area into Sukhumvit Road. The lower section of Soi Sunlight is influenced by its proximity to the Klong Toey Market, the major lower-class market of the city; by the intensive lower-class commercial area characteristic of the section of Rama IV Road adjoining the soi; and, less directly, by the port of Bangkok which is situated to the south of Rama IV Road.

The Ecological Dynamics of Soi Sunlight

The development of Soi Sunlight can be schematically divided into four major, partly overlapping stages:

- (1) Rural
- (2) Semi-urban
- (3) Early urban
- (4) Mature urban

Each of these stages is characterized by a particular type of construction and ecological differentiation; it expresses the impact on the soi of forces emanating from the wider urban framework, and brings into the area of the soi new kinds of population and new functions. Rather than attempting a detailed historical description, we shall follow this four-fold scheme in our analysis of the ecological dynamics of the soi:

Stage (1): Rural: Like other areas surrounding the city, the area of the soi was, prior to the penetration of urban forces, a rural agricultural area, part of the

village of Ban Kapi. The land served for rice-fields and orchards, though a significant part was marshy and unsuited for agricultural purposes. A wide area to the east of Soi Sunlight is still a marsh — though much of the marsh land had by now been drained and turned into urban use. Like much of the area surrounding the city, the land of the soi was originally owned by members of the royal family. A secondary klong (irrigation canal serving as a water way) ran through the area, emanating from the major klong upon which Sukhumvit Road was constructed at a later time. The soi emerged along this canal, which was eventually covered up, as part of the process of transition of the land-use in the area from rural to urban; in this the fate of the klong in Soi Sunlight resembles that of most other klongs in the city, which disappeared in the last two or three decades (Sternstein, 1982: 87, 89).

As Morell and Morell (1972: 6) pointed out, "All rice farming in the area [of Soi Sunlight] stopped after [the Second World] war, as farmers took jobs in the surrounding area." However, at the time of their study, in 1972, there were still "some poultry and pig farms, on land rented by the Chinese..." (ibid: 6), and they remark that "...this is...a very advantageous location for the latter enterprise, as land rents are cheap and markets are nearby" (ibid: 6). I have observed the last of these pig farms in 1981, on the margins of the marsh; by 1982 they were gone. At the time of writing, the only remaining signs of the agricultural past of the area, are a few patches of forlorn banana trees remaining here and there on some as yet undeveloped spots in the soi (ill. (5)).

The change in land-use patterns was accompanied, and probably also partly caused, by a change in land ownership patterns. There are still one or two mom rachawong (the penultimate grade of royalty) who own tracts of land in the soi. Otherwise, however, land ownership patterns have changed. Morell and Morell (1972: 6) already reported that "During World War II, many farmers in the area... sold their land to speculators and then moved away from Bangkok, which was endangered by Allied bombings." The new landlords were presumably not interested in farming, but in a more profitable, urban use of their newly acquired land.

The end of the Second World War thus marks the virtual termination of the rural stage; it also marks the beginning of urban penetration.

Stage (2): Semi-urban: As the pace of immigration into Bangkok increased after the Second World War, the soi became a reception area for an expanding urban population. At first the area of the soi was but sparsely settled, but soon "People began to move into the area [of the soi] in great numbers...building simple houses

and shacks on rented land" (Morell and Morell, 1972: 6). Eventually, "...houses and shacks built of cheap materials have been constructed on every available plot of land." By 1972, there was a "large sprawling slum straddling on both sides of the soi" (ibid: 5); it was located "...in the center of the soi, on a piece of undeveloped land flooded throughout the year...It is estimated that almost 1,000 families (6,000 people) now [i.e. in 1972] live there" [ibid: 5]. The available plots of land were found mainly in the central section, since the terminal sections of the soi were by then already taken up by more intensive forms of land use, under the influence of the "ribbon pattern" development on the two principal roads into which the soi issues.

Though many sparsely settled areas of Bangkok became after the war "high density reception areas for newly arrived rural immigrants" (Boonyabancha, 1983: 255), only part of those who moved into the slum on Soi Sunlight came directly from the rural areas; a significant percentage are old-timers in the city, or moved into it from smaller towns (cf. Morell and Morell, 1972:26). The slum was thus from the outset not a pure in-migrant settlement; and in the 1980's many of the residents of the "Second Slum" and of the families in the "First Slum," were inhabitants of old standing, in sharp contrast to the large and growing transient population of highly mobile singles, mainly single women, who moved mainly into the area on and around the "First Slum," deriving their livelihood from the nearby tourist area.

Most of the central area of Soi Sunlight was thus eventually converted from a rural to a semi-urban land use: in terms of density and occupation the population was urban, and many inhabitants, indeed, were long-time residents in the city. But their simple, mostly one - story wooden dwellings were:informally constructed — i.e. without planning and official permits, supervision or recognition. The area was in Turner's (1969) sense, one of "uncontrolled" urban settlement. Accordingly, the locations which this "uncontrolled" housing occupied were left blank on official maps of the Bangkok Metropolitan Administration, as if the land on which they are located was actually empty.

While at the time of writing the slums are not lift without any urban services — water and electricity are available—some essential services do not reach them; in particular, there is no efficient system of drainage and of garbage collection. As a consequence, it is true for 1984, as it was for 1972, that in the slums of Soi Sunlight, "...refuse and waste usually go into the swamps" (Slum People, 1972:11) upon which the slums are built, since "Municipal garbage collection services do not

benefit slum households unless they happen to be on the fringe of a slum..." This is so because, "Owing to the narrow walkways, garbage trucks could not get into the slum anyway" (ibid:1). As a consequence, as can be seen in Ill. (6), great amounts of garbage accumulate around the houses and on the walkways; and much of the slum area is frequently flooded during the rainy season — as is the section of the main soi adjoining the slums (ill. (7)).

The people who moved into the area which was to become a slum were not "squatters" in a technical sense of the term. Rather, they rented their land from landlords at low rates, which in 1972 were "2 baht per 4 square meters per month" (Morell and Morell, 1972:6). Ten years later the rate increased to about 3 baht per square meter, but was as yet low relative to the increase of housing rents and land prices in this part of the city. In the absence of any formal agreement, however, the landlords were at liberty to evict their slum tenants whenever they found it opportune (cf. Boonyabancha, 1983). Indeed, over the years the slum area contracted considerably, particularly in the middle and lower sections of the soi. The enclave of the "First Slum" persisted in the upper section of the soi, probably because of its attractiveness to the population of single females, as a consequence of which new wooden shacks and houses were added over time, the last as late as 1983. The increase in density (ill. (6)) and the relatively high rents asked by the landlords for this type of lodgings, appears to preserve the profitability of slum housing despite the rising land values.

By 1983, all the remaining slum areas to the west of the main soi have been eliminated, to make place for new, intensive urban development. Thereby the difference between the western and the eastern part of the soi area has been magnified: the western part is now free of slums and its newer developments merge into the higher class area in its hinterland and in the adjoining soi. The remaining slum areas are all located to the east of the main soi; the big "Second Slum" (Ill. (8)) indeed stretches between the middle and lower part of the main soi and up to the remaining marshy area (map (1)).

In terms of employment, many of the male slum dwellers work outside the slum, as laborers, factory workers, guards, hotel employees or drivers. Morell and Morell (1972:109) have already noticed in 1972 that a good deal of these are employed near their homes, and this remains also true for 1984. Many indeed work at home, as do e.g. many peddlars, small shop and work-shop owners, who are particularly numerous in the "Second Slum."

Among women the phenomenon of working at home is even more widespread. In the "Second Slum" some productive activity goes on in almost every second household; this consists mainly of preparation of foods or sweets for sale, and of "front porch enterprises" (Slum People,1972:11), selling edibles and other commonly consumed products such as soft drinks, cigarettes and toiletries. Many small stores dot the area of the "Second Slum."

Morell and Morell (1972:10) already pointed out the high percentage of "working wives [employed as] street hawkers, vendors, stall operators [and] shop owners?' They also noticed that "...the slum mother [who] works, frequently does so on her own front porch" (ibid:111); and they continue: "This is one of the most important aspects of slum life in Bangkok. Walking through any slum, one may see a mother frying bananas over a charcoal pot while she suckles her child, another twirling egg yolks and sugar through a kettle of boiling syrup to make candy, another giving her neighbor a fastidious pedicure over a plastic bowl of cold soapy water... At day's end, the left-over bananas are either eaten or...thrown down under the walkways, the 'shops' closed, and the day's earnings spent at the house of yet another neighbor who sells eggs, vegetables, and fish sauce." (ibid:111). Concomitantly, "Other housewives manage to supplement the family income by contracting work to do at home, such as paper bag making...a popular activity in which other family members can also participate, particularly the elderly. Some women take in laundry, others make candy and desserts on a contractual basis, look after other people's children, make the paper flowers required for religious purposes in Chinese temples, or make flower garlands for their children to sell in the streets." (ibid: 111).

This description continues generally to hold true for the slums in Soi Sunlight in 1984, as it did in 1972. It should be added, however, that even those male or female peddlars and vendors who ply their trade outside their homes, do this also predominantly in the area of the soi: either on the main soi itself, or in one of the many sub-sois and yards around it. Such activity is particularly intensive in the front and the surroundings of the "First Slum," owing to the large mobile population of singles in that area, who do not normally maintain a household, but acquire all of their daily necessities, including food, from the shops, stalls and food peddlars in their immediate neighborhood (cf. Cohen, in press).

We can thus conclude that the semi-urban style is characterized by a low degree of ecological differentiation. This is manifest on several levels:

(1) A significant part of the production process is conducted in the house-

holds; women in particular work at home at a variety of productive tasks.

- (2) The place of work of those who do not work in their household, is frequently located in its vicinity, in the *soi* itself, or, indeed, in the very sub-*soi* or slum in which they live.
- (3) Much of the production in the soi of goods as well as services is consumed by the inhabitants of the soi itself.

Stage (3): Early urban: In Soi Sunlight this stage started about twenty to thirty years ago, but the period of its major impact was probably in the 1970's. It continued up to the carly 1980's even as the area of the soi was hit by the more recent stage of mature urban development. In the early-urban stage, buildings of hard materials were constructed in an at least minimally "controlled" manner; the houses were laid out in an orderly way along the soi and the sub-sois and duly numbered and entered into the maps of the urban administration — as against the haphazard location and official disregard for the wooden dwellings in the slums. The dominant form of construction in this stage were shop-houses, owned and inhabited primarily by the Chinese (ill. (9) and (10)). During the period dominated by the construction of shop-houses, some other types of dwellings, such as colonial-type houses and a few villas were also constructed in the quieter areas of the sub-sois and sub-sub-sois.

The shop-houses were constructed in a ribbon-like pattern along much of the front of the main soi, and particularly its lower sections. They also formed several short sub-sois in the upper section of the soi. The shop houses replaced part of the "uncontrolled" wooden structures of the earlier, semi-urban stage along the front of the main soi and in the sub-sois. Thus the basic geographic pattern, prevailing in much of the middle and lower sections of the soi until the present day developed: front-row shop-houses screening off the wooden houses and shacks of the slum in their hinterland.

Most shop-houses enjoy more orderly urban services than the slum areas, even though their shops also frequently suffer from flooding, since drainage of the main soi is in many sections still faulty (ill. (7)). But on the whole the environmental conditions of the shop-houses are significantly better than those characteristic of most wooden houses in the slums.

^{7.} Chinese shop houses (also called row - houses) are an ubiquitous feature of Bangkok's urban landscape; however, they only rarely attracted the attention of students of the city.

The appearance and quality of shop-houses underwent considerable evolution over the years. The early shop-houses were simple, two story edifices (ill. (11)). The predominant type of shop-houses later on became three-story buildings of the kind common all over the city (ill. (10)). Shop-houses of this type line the main soi. The last major complex of shop-houses, built in the 1980's in an area off the soi, also consists primarily of this type. This complex filled a large interstitial piece of land to the west of the lower middle section of the soi (ill. (12) and (13)). A more advanced type of three-story shop-houses was also used for part of the housing in another major and more modern and heterogeneous complex, here to be dubbed "Cinema Complex," constructed at about the same time on a heretofore marshy area to the east of the upper section of the soi, along Sukhumvit Road (map (1)). This complex is many respects signifies the transition from the early to the mature urban stage, as we shall yet see.

Most recently, modern four-story buildings with shops at their first floor started to appear in the soi (ill. (14)). While technically still "shop-houses," in that the access to the upper floors is possible only through the shops (since the houses have no separate entrances), stylistically and functionally these modern structures are far removed indeed from the traditional Chinese shop-houses of an earlier period, and should be regarded as part of the mature stage of urban development.

The shop-houses differ structurally from the wooden houses and shacks of the semi-urban stage in that they are formally recognized or approved and constructed of hard building materials. Functionally, however, they still support a "traditional" rather than modern urban way of life. Their distinguishing feature is the unification of the residential and the productive functions in the same location, even if these functions are separated within the building itself. As Ong (1978:91) pointed out, in the shop-house, "Shops and homes are a single unit: if a shop is located in a simple one-story building, the rear is used as a home; if it is a building with more than two stories, the second floor is used for storage and living quarters." In the past, in particular, the shop-houses in the *soi* were typically inhabited by members of a single household, who lived and worked within its precincts. Even at present, most street-level "shops" serve productive purposes, either as stores or as work-shops, service-shops, or storage rooms of business enterprises. Many, however, especially in the sub-sois, are empty or used as garages or living rooms. In some shop-houses, especially in the upper part of the soi, rooms or cubicles are rented to lodgers; they thus cease

^{8.} This complex was marked, but it is not fully detailed, on the left margin of Map (1).

to be simple single-household dwellings. It appears that many of the most recently constructed buildings which, as mentioned above, still preserve the form of the shop-house, are not used in the traditional way at all, the upper stories being used for business or rented out, while the owners of the business establishments live elsewhere.

The shops and services of most of the traditional shop-houses were at the outset oriented primarily to the local population, i.e.to the inhabitants of the soi and of its hinterland. In the early stage of urbanization Soi Sunlight remained thus in many respects still a semi-autonomous ecological sub-system, with the inhabitants living and working within its confines and satisfying most of their needs from the shops and services located in it. It is this relatively high degree of ecological integration which came under attack as Soi Sunlight was hit by the new forces of metropolitan penetration emananting from the central city, which initiated the transition from the early to the mature stage of urban development.

Stage (4): Mature Urban: This stage, which began in the late 1970's, engendered by 1984 some significant changes in the appearance and functioning of the soi. It is characterized by the erection of modern types of buildings, a growing separation between places of residence and work, and the penetration of urban-wide services and CBD functions into the area of Soi Sunlight; all these processes gradually weaken the ecological integration of the soi.

While colonial houses and villas were the early harbingers of the approaching differentiation between the residential and productive functions, the stage of mature urban development came into prominence with the construction of a series of apartment houses facing the upper part of the main soi from the west, opposite the "First Slum." However, like the frontal parts of this slum, these apartment houses catered, and still cater, primarily to a transient local and foreign population rather than to permanent residents, for whom the soi is "home."

The lower part of the soi, characterized heretofore by mostly Chinese shophouses and light industrial work-shops, was in the early 1980's also invaded by modern residential construction: several sub-sois were built up with rows of modern duplexes, which in one area constituted a fenced-off muban (housing estate) (ill. (15) and Map (1)).

As land values rose rapidly in Bangkok in general (Durand-Lasserve, 1980) and in the area of Sukhumvit Road in particular, the rentability of more intensive housing developments increased. As in many other parts of the city in the early 1980's several high-rise condominia (Meeker-Buppha, 1980) were constructed in

the dead-end sois in the immediate neighborhood of Soi Sunlight (ill. (16) and (17)), but not, however, in that soi itself. Their absence is here probably due to the traffic, noise and pollution common on this very active through-soi, which is not considered attractive to prospective higher-class residents of condomonia. Apparently for the same reasons, some more expensive apartment houses and a high-class housing estate have also located in the dead-end soi to the west of Soi Sunlight, thus creating a high-class enclave contrasting sharply with the slums and unattractive shop-houses on Soi Sunlight. However, the accessibility and commercial character of that soi attracted to it new and modern construction projects and new types of functions oriented to a city-wide, rather than local, clientele.

The most massive expression of the penetration of metropolitan forces into the soi are several big modern complexes and single buildings which in the 1980's began to transform the earlier parochial appearance of the soi. In contrast to other sois in the area, which were transformed by high-rise condominia, in Soi Sunlight the transformation is in the first place effected by the introduction of complexes containing residential, business, service and office functions. Two such complexes were established during the 1980's: the earlier and more heterogeneous "Cinema Complex" already mentioned above (Map (1)), is located off Sukhumvit Road, and serves as a receptacle for the overspill of metropolitan functions from the main road into its hinterland, i.e. the area of the soi. It is centered on an English-language cinema, and includes both shop-houses and office-buildings. The second, more recently constructed "Pillared House Complex," is close to, but does not adjoin, Rama IV Road (Map (1)); it is influenced by the forces of commercial expansion active on that road. Here the first pillared building in the ostentatiously monumental style, fashionable in recent commercial construction in Bangkok was erected (ill. (18)). In addition to these two major complexes, individual modern buildings are presently cropping up on various other location on the main soi. Prominent among these are a four-story luxurious shopping and residential structure, built in the upper part of the soi, back-to-back with a condominium located on the dead-end soi to the west of Soi Sunlight (ill. (19) and Map (1)); and another four story building behind which expensive duplexed are in process of construction, built on land previously occupied by the remnants of a slum, to the west of the middle section of the main soi (Map (1)).

Paralleling this new kind of development, a trend of change in the nature of the businesses and services located in Soi Sunlight became perceptible. New types

of enterprises which cater to a city-wide clientele rather than merely to the local inhabitants were attracted to the area of the soi. These consist of specialized businesses such as a number of trading companies, a huge carpet store, electrical equipment stores, a sports goods store and a dental depot, as well as of specialized services, such as veterinary clinics and tourist and shipping agencies, and the above mentioned English-language cinema. In addition, some shops selling high-quality goods, such as a ladies' fashion shop, which obviously cater to a larger population than the middle and upper class inhabitants of the sub-sois, also appeared in the soi. Such enterprises are located mostly in the recently constructed modern complexes; but they are also found in some of the older shop-houses. Many of these enterprises represent an over-spill of similar functions from the main roads into their immediate hinterland: others, however, are dispersed through the length of Soi Sunlight, which is apparently in the process of becoming a secondary urban artery, like some other through-sois in this part of Bangkok. The emergence of businesses and services catering to a wider population is thus a functional correlate to the structural changes in the soi; both are expressions of the lateral urban expansion, effected by the impact of novel metropolitan forces upon the soi.

One interesting visual aspect of these developments is the recent proliferation of large, highly visible, frequently illuminated signs, advertising the businesses or the goods they offer. This visual innovation is an obvious consequence of the orientation of these new enterprises and services to an anonymous public, coming from outside the *soi* and hence unacquainted with its business life — unlike the local inhabitants for whom such advertisements would be superfluous. Moreover, since the new businesses are interested in attracting outsiders who merely pass through the *soi*, usually by car or on motorcycle, the advertisements must be big and loud enough to catch their attention.

The most prominent example of the penetration of metropolitan forces into the area of Soi Sunlight, however, is the growing presence in this area of CBD functions — company headquarter and business associations. These chose their abode in the upper section of the soi, close to the Sukhumvit Road, and especially in the new complex adjoining that road, where several buildings serve them exclusively, offering no residential space at all; this is the first case of specialized non-residential construction in the area of the soi. At the time of writing, this form of metropolitan penetration is mostly an overspill phenomenon, but with the construction of ever more spacious modern buildings in the soi, such functions will in all probability

penetrate it to a greater depth.

The penetration of the soi by modern businesses and company offices, in turn, brings a new day-time working population into the area of the soi: office employees and personnel whose place of work is located in the area of the soi, but who reside elsewhere; these, as we shall see, have in turn a further effect on the services offered by the soi.

The mature stage of urban development of the soi thus leads to a process of growing separation between the place of residence and the place of work: on the one hand, it brings into the soi a population — living in apartment houses, duplexes and other residential structures, — whose places of work are outside the soi, ou the other hand, the new businesses and offices penetrating the area of the soi bring into it employees who reside elsewhere. The mature urban stage leads to a gradual weakening of the ecological integration of the soi and to its greater incorporation into the citywide ecological division of labor. In this study only the recent inception of this process has been observed; but there is little doubt that it will continue in the future, eventually changing not only the physical appearance of the soi, but also its ecology, and with it its social composition.

Discussion

The four stages of the ecological development of the *soi*, described above, can be analytically represented as specific configurations of three principal variables, i.e. the nature of land use, the extent of formal control over construction and ecological differentiation (Table (1)):

Table (1): Stages of Ecological Development of Soi Sunlight by Principal Variables

	Land Use	Control by Authorities	Ecological Differentiation	
Stage	Rural –	Uncontrolled -	Low -	
	Urban +	Controlled +	High +	
Stage (1): Rural	_	-	_	
Stage (2): Semi-urban	+	-	_	
Stage (3): Early urban	+	+	_	
Stage (4): Mature urban	+	+	+	

Table (1) demonstrates that the process of urban development of the soi is constituted of stages which form an ordered Guttman-scale: the transition from rural (stage (1)) to urban begins with "uncontrolled" housing and a low degree of ecological differentiation (stage (2)); it is followed by a stage of "controlled" construction under continuing low differentiation (stage (3)); it eventuates in the currently evolving stage of "controlled" construction accompanied by a high degree of ecological differentiation (stage (4)). It should be emphasized, however, that the stages had no sharp temporal boundaries; neither did they completely supersede one another. Rather, a considerable overlap between them is evident, with the last phase of an earlier stage continuing into the early phase of the following one. Since the later stages invaded only part of the area taken up by the preceding ones, the present landscape of the soi features elements of all four stages. Of the rural stage (1), only isolated reminders can be encountered in some marginal or as yet undeveloped spots in the area of the soi (Ill. (5)). The semi-urban stage (2) is represented by extensive but receding slum areas, particularly in the lower part of the soi. The early urban stage (3), expanding until recently, provided most of the principal housing stock in the soi; it began to recede only in 1984 with the destruction of some of the oldest shop-houses to make way for new construction; the late urban stage (4) is represented by several modern complexes and buildings, some still in process of construction; it is at present expanding rapidly, invading particularly the remaining slum areas.

As a consequence of the distinctive pattern of its ecological development, Soj Sunlight is presently marked by considerable ecological heterogeneity, accompanied by social diversity. Structures pertaining to various stage of its development, with correspondingly different populations, closely adjoin one another (ill. (20) — (21)): the soi is thus a geographical and social mosaic, composed of buildings of sharply varying appearance, quality and function, and of populations of diverse ethnic, sociocultural and socio-economic backgrounds: The veteran slum dwellers are mainly central Thais, and Chinese. The more recent arrivals to the slums are predominantly Thai-Lao speaking north-easterners (Isan people). Some higher class Thais, including low-ranking royalty, occupy some of the most sumptuous residences in the soi, which at least in one case border on a slum. The shop houses are occupied primarily by Chinese, though some are at the time of writing also inhabited by Thais. In the upper part of the soi, close to Sukhumvit Road, there is a small concentration of Indian families. The inhabitants of the apartment houses are highly mixed, with a strong foreign (farang) element. Foreigners also live in some of the colonial houses and villas in the sub-sois; some foreign drop-outs live in the slums (Cohen, forth-

coming).

Though they often live in close proximity, there is little social intercourse between the different groups of inhabitants of the soi. People living in one type of habitation, e.g. wooden slum-houses or shop-houses have little interest in and contact with the inhabitants of the other types.

There persists, however, a considerable degree of functional integration, with the socio-economically lower groups, in particular, deriving much of their income from work in the soi and buying in it many of their daily necessities. Much of this economic activity is highly localized in sub-sois or other sections of the area of the soi. Social life, i.e. daily interaction between the inhabitants, is similarly localized in the immediate neighborhood, the yard or the house. The Chinese shop keepers keep to themselves, the residents of apartment houses are isolated from street life, though within the larger ones there is much mutual visiting between residents. Socializing is common in the many small restaurants and eating places in front of the slums (Ill. (22)). This endows the soi with the ambience of a vibrant street-life, but this is actually restricted to a relatively small number of lower-class inhabitants, many of them transients.

Higher class residents are rarely seen on the street, but mostly rush through it in their cars. The *soi* as a whole, hence, lacks an over-all social integration and does not consitute a "community."

Among the lower class residents in the upper section of the soi one particular group stands out, endowing much of this area with a peculiar character: this section is the abode of a large transient population of singles, mostly Thai girls engaged in different forms of tourist-oriented prostitution (Cohen, 1982 and in press) and of some young Thai males who live among and sometimes with the girls. The penetration and proliferation of this population in the soi is mainly due to the fact that at the period of the expansion of the nearby tourist hotel and entertainment area, during the Vietnam war, when large numbers of American G.I.'s came to Bangkok on R. & R. furloughs, the girls working in that area found in the soi, and particularly in the "First Slum," conveniently located and cheap accommodations. With the penetration and expansion of this transient population into that area, the soi acquired a reputation as a place of cheap lodging and food, which attracted to it additional Thai girls engaged in Tourist — oriented prostitution, as well as other transient elements, including foreign drop-outs (Cohen, forthcoming). The transient population, in

turn, had some significant effects on the ecology of this part of the soi: 9 as it tended to concentrate in the area close to the main soi, landlords constructed additional rooming-houses, specifically for rent to transients, in some cases even bringing in old barracks and erecting them in the "First Slum." This increased the density of that slum and probably contributed to its preservation as an enclave of low-level housing in an area close to Sukhumvit Road, the land prices in which are rapidly rising. The presence of that transient population, encouraged the establishment of a variety of shops and services catering to their needs, particularly restaurants, eating-places and food-stalls (ill. (22)). The arrival of a growing number of employees of the offices and businesses which have been established in the upper section of the soi in the wake of its recent penetration by metropolitan forces, created an additional demand for such services, thus leading to their further proliferation. Only the future will show how resilient this particular enclave of the "First Slum" will be to the growing forces of metropolitan expansion.

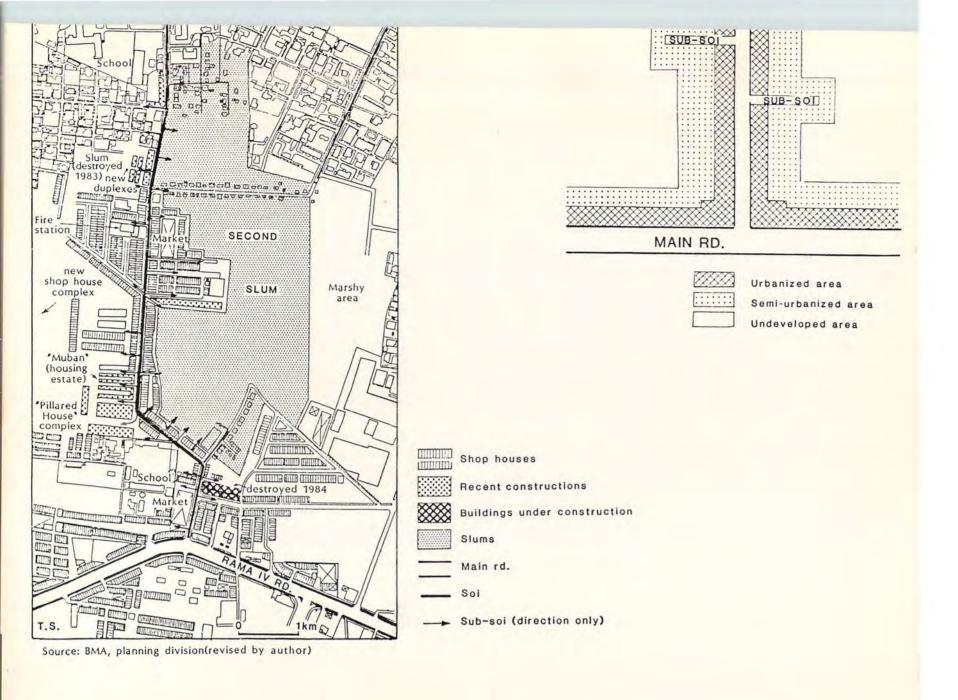
Conclusions

This paper examined the process of "lateral urban expansion" which was rarely, if ever, reported in the literature: the expansion of urbanization from the main arteries penetrating the countryside from the central city, into the hinterland lying between them. This process was illustrated with a detailed case study of a soi (lane) in Bangkok. The principal finding of this study is that the process of lateral urban expansion has, in the case under investigation, proceeded by four analytically distinct but temporarily partly overlapping stages. While the latter stages invaded some areas built up in the earlier ones, none superseded its predecessors completely, so that the present landscape of the soi is a highly heterogeneous mosaic of areas built up during different stages, with a correspondingly segmented population. It was demonstrated that during the earlier stages of development, the soi constituted in significant respects a semi-autonomous ecological sub-system, even though it was never a socially integrated community. The recent penetration of metropolitan forces gradually destroys this autonomy as it integrates the soi into the city-wide ecological division of labor. These forces are presently accelerating and striking at the weakest constituents of the present ecological structure of the soi — the still extensive slum areas. The eviction of these areas, in Soi Sunlight as elsewhere in Bangkok, will

^{9.} The specific ecological effects of the presence of this population will be the subject of a separate publication.

make available large tracts of land for big new urban construction complexes, for which there is not sufficient available space along the main arteries. Such "interstitial developments" may eventually completely transform the appearance and ecology of the soi and turn it into an integral part of the central city, while forcing its slum dwellers to look for alternative habitations elsewhere. Since such processes as described here occur, in fact, throughout the city (Boonyabancha, 1983), this population will probably experience increasing hardships in its search for housing commensurate to the means at its disposal.

As in other sois, the ecological intensity and complexity was also found to be greatest at both terminal sections of Soi Sunlight, which were greatly affected by the overspill from the two main urban arteries linked by the soi. The nature of the developments at each terminal, however, differed according to the nature of the land use in the adjoining main artery. Since Sukhumvit Road is generally more modern than Rama IV Road, it was mainly from the side of this road that modern enterprises and CBD functions penetrated Soi Sunlight. The middle section of the soi has until This section, therefore, offers the greatest recently been least intensely used. opportunities for "interstitial development" in the future, of the kind exemplified by the last major shop-house complex, built in the 1980's. As the interstitial areas are built up, and the main soi comes to serve city-wide rather than localized functions, Soi Sunlight will gradually lose its character as a "lane" and become a regular "street," serving as a secondary artery of the urban network. The process of urbanization, spear-headed many years ago by the penetration of major urban arteries into the agricultural land surrounding the central city, will thereby reach completion - and only small enclaves of buildings hailing from the earlier stages of the soi's development will remind the visitor of its past.



Map (1): Soi Sunlight: Principal Ecological Features

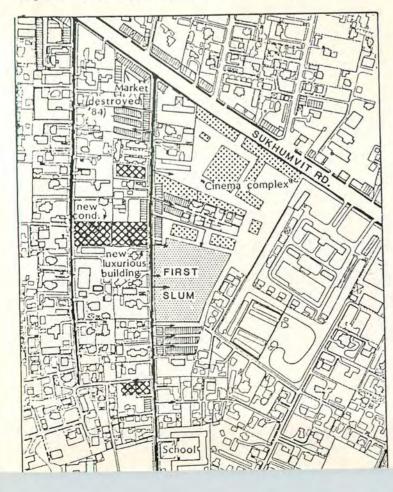
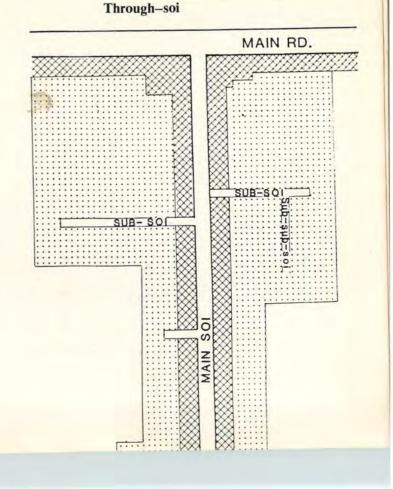


Diagram (1): Schematic Representation of Ecological Structure of Typical



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1. Sukhumvit Rd. -- General View*

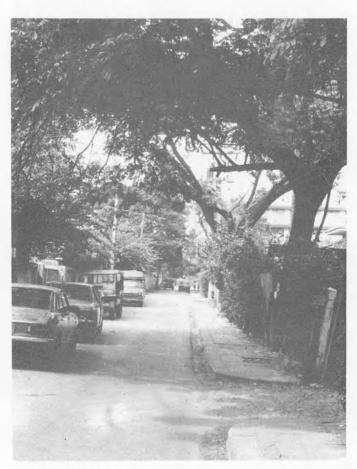


2. Traffic on Sukhumvit Rd.

^{*} All photographs by the author



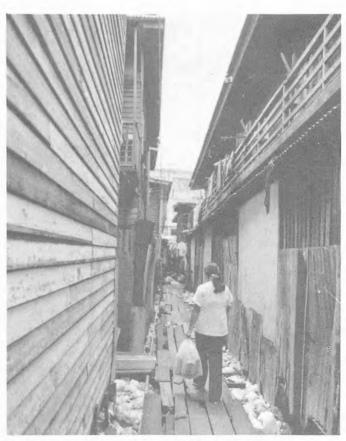
3. Traffic Congestion on Soi Sunlight



4. Dead-end Soi



5. Wooden Houses and Banana Clump on Margin of the Area of Soi Sunlight



6. Garbage Accumulation in "First Slum"



7. Flooding in front of "First Slum"



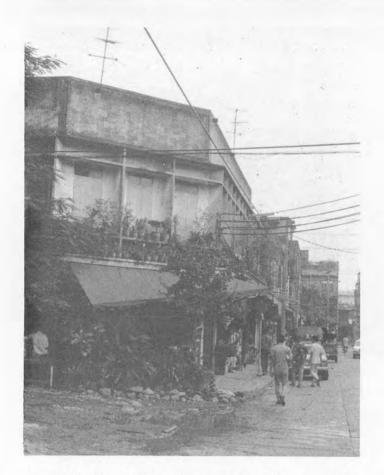
8. Wooden Shacks in "Second Slum"



9. Shop-Houses in Soi Sunlight



10. Shop-Houses in Soi Sunlight



11. Early Shop-Houses, Lower Section of Soi Sunlight



12. Shop-House Complex Under Construction in Interstitial Area off Soi Sunlight



13. Shop-House Complex in Interstitial Area (1983)



14. New Four-Story Building Under Construction (1984)



15. Housing Estate off Lower Section of Soi Sunlight



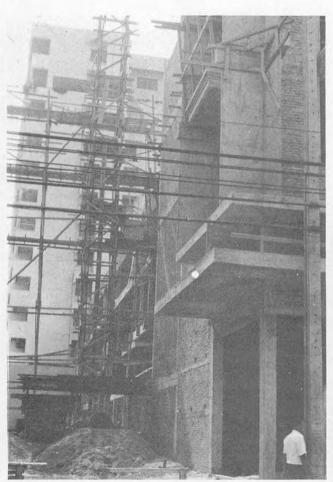
16. Condominia in Soi adjoining Soi Sunlight(1981)





17. Condominium in Neighboring Soi (1984)

18. New Construction in Ostentatious Commercial Style in Soi Sunlight (1984)





19. Condominium at back of New Four-story Building 20. New Shop Houses Adjoining First Slum (1980) (ill.14) on Soi Sunlight (1984)





21. Mix of Old and New Construction in the Area of 22. Food-stalls in Front of "First Slum" Soi Sunlight (1984)

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