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ON SEVERAL FEATURES AND PROBLEMS OF URBANIZATION IN JAPAN

General concept of urbanization in Japan

In the 1870's when Japan decided to abolish her feudal regime and opened her doors to the Western powers, she had a population of 35 million (91 per km²), about 70 % of whom were in agriculture or the first category of industries. Now Japan has 100 million people (268 per km²) about 25 % of whom are engaged in primary industries. The excessive fall in the percentage of the primary category has been observed especially in the 25 years of the post war period, and is tending to fall even lower.

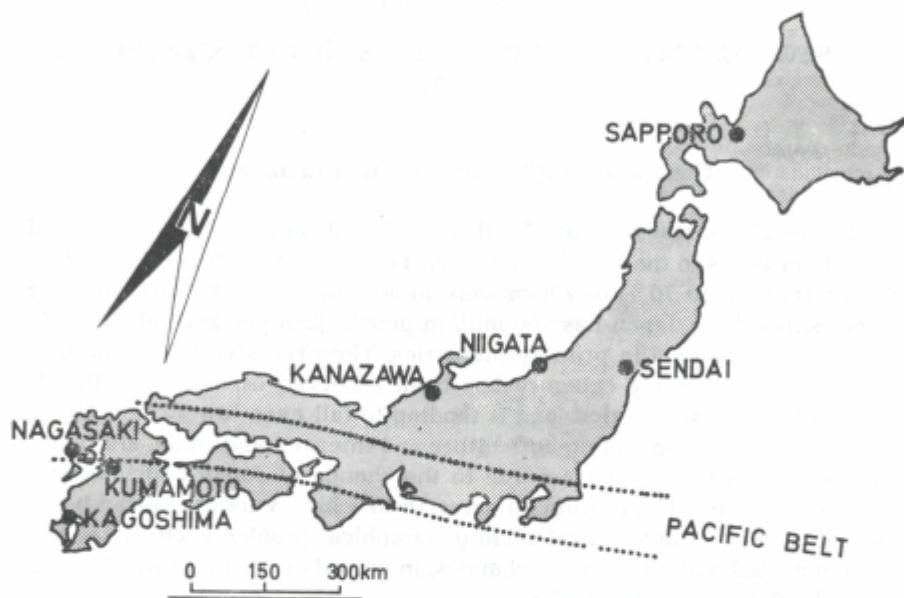
But the causes, including agriculture and international trade, are rather complicated. In short, they are due to the change of Japan's socio-economic basis, i. e. the change from an agrarian to a highly industrialized basis. Now we can point out several socio-geographical problems which are closely connected with those basic changes, in accordance with those changes, in the field of urban geography;

- a) The formation of new industrial zones beside the classical highly developed industrial zones.
- b) The concentration of population in the so-called »Pacific Belt« (in other words, in the »Axis of population«).
- c) The formation of metropolises like Tokyo, Osaka and Nagoya. Above all, the concentration of both demographic and capital investment in Tokyo results in the formation of a hypertrophy of urbanism, producing a lot of problems. In another words, this is a testimony to the concentration of capitalistic powers and the relative decentralization of productive forces.
- d) The relative stagnation of small local towns, both in their activities and also in their population.
- e) The acceleration of depopulation in rural villages located in remote mountainous regions.
- f) The stagnation of agricultural production, especially in the regions specialized in rice cultivation.

Thus, Japan's industrialization coincides with urbanization, which produces a lot of acute problems to solve. For this point, I shall explain selected specific features and several examples concerned with urbanization.

The recent trend of large cities' population dynamics and their geographical distribution

Though Japan has almost 650 cities, the size of which varies from 40.000 to 10.000.000 I take now the 131 cities having a population of more than 100 thousands. Their geographical arrangement is rather interesting. If we consider the population change in each city in the decade of 1955—1965, we can point out several special features also follows;



»Pacific Belt« and local centres in Japan.

»Pacifiški pojas« i lokalna središta u Japanu

1) Cities located along »Pacific Belt«.

78 of the total of 131 cities, or about 60% of them are located along the »Pacific Belt«. In this category population growth in the decade exceeds 13%. With other specific features, the Belt is regarded as the axis of concentration of population and the area accumulated with financial-and private-capital investment, and the area industrialized or being industrialized.

The Belt includes all of the four industrial regions with a formation of sattleite cities and an influenced area around them. Some specialists of urbanism regard this belt as Japan's Megalopolis. Even such smaller cities or towns having a population of 20—30 thousand, included in this Belt, are increasing their population. Furthermore, there are many new towns, or so called dormitory towns, concentrated in this category.

Table 1. Increasing ratio of population within each administrative boundaries.

Population of cities, towns (in thousands)	1955—60	1960—65
mean	4.6 %	5.2 %
Over 1000	17.5 %	9.1 %
500—1000	26.4 %	24.6 %
300—500	13.3 %	13.9 %
200—300	8.1 %	14.8 %
100—200	9.5 %	16.9 %
50—100	4.0 %	8.4 %
30—50	1.6 %	2.3 %
20—30	-1.7 %	-0.8 %
10—20	-3.1 %	-4.2 %
5—10	-4.7 %	-8.3 %
less than 5	-5.6 %	-13.4 %

(Data compiled by the Institute of Population Problems, from Demographic census of Japan.)

2) There are 53 cities located out of the Belt. We divide them into 2 categories.

a) Local centres, or local nuclei; there are only 7 cities in this category which exceed 300 thousand population. The population increase in each of the 7 cities in 5 years (1960—65) exceeds 6 %, without exception. (The average population increase in Japan is thus about 6 %—7 % for 5 years. So, 6 % plus alpha indicates the existence of a social population increase.)

They are (1) Sapporo, (2) Sendai, (3) Niigata, (4) Kanazawa, (5) Kumamoto, (6) Kagoshima, and (7) Nagasaki (figure). If we plot them on the map of Japan, they are reasonably separated.

Each of them is the seat of a local (prefectural) government, but we must point out that these cities' activity penetrates beyond the prefectural boundary and influences a much wider sphere. Now, the reorganization of an administrative regions is being discussed by politicians and administrators in Japan. There is an idea that 46 prefectures should be compressed into several (5—10, or 12) larger units. The geographically adequate distribution of these seven »300 thousand plus alpha« cities is such that they should spontaneously form the nuclei of such new administrative divisions. The Japanese government pays much attention to these seven and several other cities of slightly less than 300 thousand to be regarded as centres of »New Industrial Urban Regions«, because these regions should be able to develop their industries with a relatively small amount of financial investment.

On this analysis (with other conditions) the Japanese government has authorized nearly 20 New Urban Industrial Regions. Most of them are located within the Pacific Belt, or in these regions of which the cent-

res are the »300 thousands plus alpha« cities above mentioned, or finally two inland regions.

- b) Local smaller cities, located in remote regions. From the viewpoint of population increase, most of the cities in this category are those that suffer from stagnation, or in the worst case, from a decrease of population. Such cities mostly have a relatively simple function on account of their long historical existence; for instance, small cities lie in a narrow drainage area or in a small basin, acting only as centres of agricultural production, even if they had once flourished when Japan was the producer of silk, rice, and other materials and was not an industrial producer.

In addition to this, we must take a glance at the fact that more than 1500 towns and villages (all of them being administrative local bodies including a city — about 3,300) suffer from excessive depopulation. As we saw before, those towns and villages are in general located in regions remote from the nation's main activity centres or Belt, located at the seaside where small-scale fishery cannot support and meet the household economy of the fishermen, or located on steep slopes amidst mountainous regions.

Still, seven cities of over 100 thousand population suffer from depopulation. That is to say, there are warnings that within the next five or ten years. (a general demographic census is being held in autumn 1970), some of the medium sized cities will be in the some dangerous situation.

Table 2. Population ratio in three metropolises in Japan

metrop. sphere	Whole Japan = 100.0 %			Population (in thousand)
	1955	1960	1965	1965
Tokyo	17.2 %	19.2 %	21.3 %	21,017
Osaka hanshin	11.4 %	12.2 %	13.3 %	13,070
Nagoya	7.7 %	7.8 %	8.2 %	8,013
Total	36.3 %	39.2 %	42.8 %	42,100

(Data obtained from Population census of Japan)

Concentration of population in Metropolises

There are seven big cities in Japan exceeding one million population which in all contain about 20 % of the nation's population. Among them, Tokyo, Osaka, Nagoya and their adjacent regions form three large metropolitan sphere, where about 43 % of Japan's whole population is maintained on 13 % acreage of the whole territory. (See table 2). Especially, Tokyo with of the its three adjacent prefectures, has 1,586 population density per one km². Now let us examine some specific features of Metropolises.

- 1) Problems of dwelling spaces coincided with a high pitched increase of private land values.

Locational sites of dwelling for citizens spread over a much wider sphere than before. Now it is not unusual for white collar workers to commute from their residence from a range of 30—40 km to Tokyo central, losing 3 or 4 hours every day though railway traffic services by both national and private organizations are highly developed.

Table 3. Population increase ratio within Tokyo and Osaka 50 km sphere zones.

peripheral zones*	ratio for Tokyo		ratio for Osaka	
	1955—60	1960—65	1955—60	1960—65
	(%)	(%)	(%)	(%)
0—10 (km)	13.4	—1.4	20.7	12.3
10—20	29.8	25.3	19.5	41.3
20—30	22.7	40.4	13.3	20.7
30—40	15.4	36.9	7.8	14.0
40—50	3.3	15.4	0.8	2.4
mean	18.6	19.8	14.0	17.0

*concentric circle from civic center; data from Research Institute for Population.

Table 2 indicates this tendency clearly because the sphere of the most rapidly growing population shifts to a wider sphere annually. Though Residential Cooperation and local governments make efforts to resolve such an acute difficulty by the successive construction of new »Massifs« and so-called »New towns« in the suburbs, and by the project of the renewal of urban centres, the effort is obstructed by the high pitched increase in the cost of land acquisition.

Even in the process of the formation of »New Towns«, there are many elements (both human and physical) which cause the land values to go up before local governments succeed in acquiring land for construction. Urban renewal projects are also upset by the difficulty of acquisition of enough space to make clearances because of the extremely high values of land in central urban districts.

Take the example of Kōhoku New Town project in the north of Yokohama city. The city office set up the Residential cooperation project (a public body) covers an area of some 2 thousand ha. The countryside still a pleasant green. The city office prohibits the change of ownership, that is meant to stop registration shift on items on the cadaster (register) within the project area. This unusual restriction is for the purpose of maintaining the large acreage in a rural situation, to prevent the sprawls caused by private capital until the very beginning of the project. Private, individual, small capitals will never be able to integrate planning unless under the supervision of government bodies.

- 2) Problems of commuting and the congestion of railway and road transportation. This means problems of traffic to and in urban centres.

In Tokyo, there are some schemes like the construction of (i) municipal highspeed ways for automobiles (about 60 km are now in service), (ii) Underground (subway) railway network (about 100 km is in service), (iii) Monorail transportation network (about 14 km is in service). But, for the ever-increasing population not in the central districts but in the periphery of Tokyo, these schemes are not sufficient. For example, underground railway construction costs 4 billion Yen (about 11 million us dollars) per kilometer. Express ways (for autos) cost 1 billion yen respectively.

Increasing public nuisance

In these days, most of Japan's press and papers are engaged in all-out campaign on the presence of and for schemes of counterattack on such nuisances as air pollution, poisoned waste water, sedimentation of heavy metal substances in rivers or on the sea bottom, land subsidence in industrialized zones caused by excessive pumping up of ground water and so on. Let us take the example of Niigata, from the point of urban geography. The city of Niigata, located on the Japan Sea coast in Central Honshu, with 350 thousands population at that time, suffered from a heavy earthquake on June 16th, 1964. The magnitude at the centre of the quake was 7.8 and at the seabottom about 70 km from the city; seismic intensity in the city was 5 to 6 degrees.

The city of Niigata was the most flourishing sea port on the Japan Sea coast, with a concentration of commercial functions and of petrochemical, steel, paper and lumber, shipbuilding and metal processing industries. One of the leading companies located there from 1962 to 64 a huge oil refinery, which provoked a big fire just after the quake; though there was no fire from citizens' residences because they extinguished fires at the start all by themselves. The fire caused by the oil refinery burned out about 350 citizens' small dwellings. Moreover, the scale of damage was doubled when high tidal waves originating from the quake washed over the broken river-side embankments, collapsed port facilities and then dashed into the city.

The damage by this flood was aggravated by the subsidence of ground, a phenomenon already recognized over a period of many at least ten-years. Though it is quite clear that land subsidence had been caused by the pumping up of natural gas and gas containing ground water, it was only three years before the quake that preventive measures were undertaken for the first time, measures which were far from sufficient considering the demands of citizens. Yet the ground still continued to sink when the city was hit by the earthquake.

This is an example that shows how little consideration has been paid to extra reinforcement and earthquake-fire-flood-proof devices in industrialized cities in Japan. We must pay attention to the evidence that most of Japan's industrial cities and conurbations are maritime, that is, located at river mouths on soft alluvium and on deltaic sedimentation, or at the shores of bays. Then also pay attention to the sad that Japans' petrochemical industries have a tendency to select their »Standort« near such mari-

time cities because of facility of consumption and of transportation. (Japan imports 99 % of its annual consumption of petroleum from abroad).

The bitter experience of the catastrophe of Niigata city has suggested to us above all the urgent need to construct new industrial cities sufficiently armed with adequate modern facilities against disasters.

For further studies-temporary conclusion

We have discussed some of the features of urbanization in Japan, utilizing several examples. Though this paper cannot cover all the problems, we can see the necessity of further studies like this.

What sort of elements are combined with each other to establish such »hypertrophic urbanism«. To take the instance of Tokyo, the city covers 20 % of productive incomes, 30 % of total sales (in money value), 58 % of the number of head-offices of the biggest companies (each of them exceeds 5 billion yen in capital investment), 50 % of university students. (Japanese total in each item = 100 %).

Next, to avoid »natural disasters« (we must find out in the word »natural« which causes the human side is involved in), many more case studies should be done to discover the insufficiency of political, administrative contra-disaster schemes. For this reason, social and historical geography and urban geography should be in close collaboration with urban technology and physical geography, especially the surface geology of the Quaternary period-and this is specially important for Japanese cities on soft alluvium. For instance, the western maritime part of Osaka city has suffered every 2 or 2 years from high-tide disasters connected with typhoon blasts. For the analysis we must begin our study from the day of formation of the small village in the Osaka delta, because each city district in Osaka differs from every other in the niveau of ground and foundation level. Though it will be a painstaking and troublesome work, it is closely attached to the local citizens' Sentiment and needs.

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RAZNE OSOBENOSTI I PROBLEMI URBANIZACIJE U JAPANU

(Sažetak)

Opšti koncept urbanizacije u Japanu

Oko godine 1870, kada je u Japanu nestalo feudalne vladavine i kada su otvorena vrata zapadnim uticajima, država je imala 35 miliona stanovnika (91 na km²) i 70 % stanovništva je radilo u poljoprivredi ili u primarnoj industriji. Danas Japan ima 100 miliona stanovnika (268 na km²) i samo 25 % još radi u primarnoj industriji. Ogroman pad udela primarnih delatnosti se naročito ispoljio u vreme 25 godina posle drugog svetskog rata.

Razlozi tih promena takođe obuhvataju i poljoprivrednu i međunarodnu trgovinu i prilično su komplikovani; uglavnom se svode na promene u japanskoj socijalno-privrednoj bazi, tj. na prelaz od agrarne na visoko-industrijsku bazu. Tako možemo ukazati na razne socijalno-geografske probleme tesno povezane s ovom osnovnom promenom i to naročito na području urbane geografije:

- a) Obrazovanje novih industrijskih pojaseva pored dosadašnjih visokorazvijenih industrijskih pojaseva.
- b) Aglomeriranje stanovništva u tzv. »Pacifički pojas« — japansku »osovinu stanovništva«.
- c) Obrazovanje metropola: Tokija, Osake i Nagoje. Usled koncentracije i stanovništva i kapitala u Tokiju razvili su se različiti oblici hipertrofičkog urbanizma, i to je dovelo do brojnih teškoća. Ukratko, to je primer usredotočenja kapitalističkih snaga i relativne decentralizacije proizvodnih snaga.
- d) Srazmeran zastoj malih gradova u njihovoj delatnosti i u razvoju stanovništva.
- e) Ubrzana depopulacija stanovništva po selima u udaljenim planinskim predelima.
- f) Zastoj poljoprivredne proizvodnje, osobito u predelima specijalizovanim u gajenju pirinča.

Na taj način industrijalizacija Japana se poklapa s urbanizacijom i prozrokuje brojne teškoće. S tim u vezi objasniću odabrane karakteristike, a izneću i nekoliko primera urbanizacijskih problema.

Novе tendencije u dinamici i geografskom razmeštaju velegradskog stanovništva

Japan ima oko 650 gradova između 40.000 i 100.000 stanovnika. Uzećemo 131 grad sa više od 100.000 stanovnika. Njihov geografski raspored je prilično zanimljiv. Promene stanovništva u deceniji 1955—1965. pokazuju sledeće osobenosti:

- 1) *Gradovi uz »Pacifički pojas«.* 87 gradova od 131 grada (tj. 60%) nalazi se uz »Pacifički pojas«. Porast njihovog stanovništva u toj deceniji prevaziilazi 13%. S ostalim svojim osobenostima »Pojas« se smatra osovinom usredotočenja stanovništva u području nagomilanog javnog i privatnog kapitala, a i području čija je industrijalizacija izvršena ili je u toku.
»Pojas« obuhvata četiri industrijske regije i mnogobrojne satelitske gradove s prostorom uz njih i pod njihovim uticajem. Neki urbanistički stručnjaci u tom pojasu vide japanski »megalopolis«. Čak i manji gradovi u tom pojasu, sa stanovništvom od 20.000—30.000, pokazuju porast stanovništva. I mnogi novi gradovi, tzv. »gradovi gde se spava«, tu su koncentrisani.
- 2) *53 grada leže izvan »Pojasa« i pripadaju dvema kategorijama*
 - a) *Lokalna središta:* svega sedam njih ima preko 300.000 stanovnika: 1. Sapiro, 2. Sendaj, 3. Nigata, 4. Kanazava, 5. Kumamoto, 6. Kagošima, 7. Nagasaki. Porast stanovništva u tim gradovima je bio u raz-

doblju 1960-65. barem 6 %. (Poprečni porast stanovništva u Japanu iznosi 6—7 % za pet godina).

Svaki od ovih gradova je sedište gradske (prefekturne) uprave, ali delatnost tih gradova dopire i preko prefekturnih granica i utiče na mnogo šira područja. Upravne oblasti baš sada diskutuju u japanskoj vladi o reorganizaciji upravne podele. Postoji predlog da se broj od 46 prefektura smanji na 5—12 većih oblasti. Geografsko pogodna raspodela imenovanih sedam gradova treba da služi kao osnov za novu administrativnu podelu. Japanska vlada obraća mnogo pažnje na tih sedam gradova, s malo manje od 300.000 stanovnika, kao buduća središta »novih regija industrijskih gradova«, pošto će ove regije verovatno biti u stanju da razviju svoje industrije sa srazmerno manjim javnim investicijama.

- b) *Manji gradovi u udaljenim regijama.* Što se tiče porasta stanovništva većina gradova u ovoj kategoriji pati od zastoja ili čak smanjivanja broja ljudi. Takvi gradovi većinom imaju srazmerno jednostavnu funkciju zbog svoje duge egzistencije; takvi gradići leže npr. u kotlinama i sada su samo poljoprivredna središta, koja su cvetala kada je Japan proizvodio svilu, pirinač itd, tj. kada Japan nije bio industrijski proizvođač.

Ne treba zaboraviti da preko 1.500 gradića i sela pate od jake depopulacije. Većina tih varošica i sela nalaze se daleko od glavnih središta delatnosti i »Pojasa«, leže na morskim obalama i funkcioniraju kao sedišta sitnog ribarstva, ili se nalaze na strmim brdskim padinama.

I konačno, tu je još sedam gradova s preko 100.000 stanovnika koji pate od depopulacije. Postoje isto tako znakovi da će unutar sledećih 5—10 godina neki između srednje velikih gradova biti u istom opasnom položaju.

Nagomilavanje stanovništva u metropolama

Sedam velegradova u Japanu ima preko milion stanovnika, i zajedno obuhvataju 20 % celokupnog stanovništva Japana. Među tim gradovima tvore Tokio, Osaka i Nagoja, sa svojim regijama, tri ogromne metropole s oko 40 % celokupnog stanovništva države i to samo na 13 % površine.

Udeo stanovništva triju japanskih metropola:

Područje metropole	Sav Japan = 100 %			U hiljadama stanovnika
	1955	1960	1965	1965
Tokio	17,2 %	19,2 %	21,3 %	21.017
Osaka	11,4 %	12,2 %	13,3 %	13.070
Nagoja	7,7 %	7,8 %	8,2 %	8.013
Ukupno:	36,3	39,2	42,8	42.100

U metropolama postoje određeni specifični problemi:

Problemi stambenog prostora se poklapaju sa veoma visokim porastom cene privatne zemlje. Stambene zgrade se sada dižu u mnogo širem krugu negoli ranije. Danas nije neobično da viši nameštenici putuju od svojih kuća 30—40 km do tokijskog centralnog kolodvora i gube dnevno 3 ili 4 časa, iako je železnički saobraćaj, i državni i privatni, visoko razvijen.

Postotak porasta stanovništva u sferama sa poluprečnikom 50 km oko Tokija i Osake:

Pojasevi između koncentričnih krugova udaljenih od centra	Postotak za Tokio		Postotak za Osaku	
	1955-60	1960-65	1955-60	1960-65
0—10 km	13,4 %	-1,4 %	20,7 %	12,3 %
10—20 km	29,8 %	23,3 %	19,5 %	41,3 %
20—30 km	22,7 %	40,4 %	13,3 %	20,7 %
30—40 km	15,4 %	36,9 %	7,8 %	14,0 %
40—50 km	3,3 %	15,4 %	0,8 %	2,4 %
sredina	18,6 %	19,8 %	14,0 %	17,0 %

Tablica jasno ukazuje na tu tendenciju, pošto se krug najbrže rastućeg stanovništva iz godine u godinu premešta u sledeći širi krug. Iako »Stambeno udruženje« i gradske uprave nastoje da tu teškoću reše uzastopnim gradnjama tzv. »novih gradova« u predgrađima, pa i projektima obnove gradskih centara, ti su naponi ometani oštrim porastom zemljišnih cena.

I kod procesa formiranja »novih gradova« dolazi do podizanja zemljišnih cena još pre nego što gradske uprave stignu da nabave terene za gradnju. Projekti obnove gradskih centara imaju teškoće oko nabave dovoljne površine, i to zbog krajnje visokih cena u centrima gradova.

Problemi redovnog prevoza između mesta stanovanja i radnog mesta i zastoji železničkog i cestovnog transporta. U Tokiu ima više specijalnih projekata: (I) gradnja gradskih autocesta (oko 60 km već je gotovo), (II) podzemna železnica (s oko 100 km), (III) mreža jednotračnih pruga (14 km već je gotovih). Međutim za stanovništvo koje ne živi u centru, već na periferiji Tokija, ti projekti nisu dovoljni, iako su strahovito skupi (npr. 1 km podzemne železnice košta oko 11 mil. dolara).

Teškoće. Baš ovih dana u japanskoj štampi su objavljeni brojni članci o potrebi sveopšte temeljite kampanje protiv zagađenja zraka, otrovnih otpadnih voda, protiv odlaganja teških metalnih predmeta na dnu reka ili mora, o snizivanju zemlje u industrijskim pojasevima zbog preteranog iskorištavanja podzemnih voda itd. Pogledajmo kao primer grad Nigatu sa stanovišta urbane geografije. Nigata leži na Japanskom moru u centralnom Honšuu i ima 350.000 stanovnika. 16. juna 1964. Nigata je pretrpela jak zemljotres, stepena 7,76 na morskome dnu, 70 km pred gradom, a od 5—6 stepena u samom gradu.

Nigata je bila najveći lučki grad na obali Japanskog mora, sa koncentracijom trgovine i petrohemijske, čelične, papirne, drvne i metalne industrije i brodogradnje. U jednoj od najvećih fabrika, u velikoj rafineriji nafte, odmah posle potresa nastao je požar. Obim štete je bio udvojen kada je ogroman val posle potresa odneo razbijene kejeve i srušene pristanišne naprave i zatim tresnuo o grad.

Šteta nakon ove poplave je bila pogoršana sniženjem zemlje, što je bila posledica nestanka prirodnog plina; tri godine pred potresom bile su doduše poduzete obrambne mere, ali u mnogo manjem obimu nego što su meštani zahtevali. Zemlja se ponovno snizila kada je zemljotres pogodio grad.

Ovaj primer pokazuje kako je bilo obraćeno malo pažnje na mere predostrožnosti protiv zemljotresa, požara i poplava u industrijalizovanim japanskim gradovima. Treba imati na umu da većina japanskih industrijskih gradova leži na obali, tj. na ušćima reka, na mekanim naplavinama i deltskim sedimentima ili na obalama zaliva. Takođe treba uzeti u obzir da japanska petrohemijska industrija obično izabire svoj smeštaj blizu primorskih gradova zbog lakšeg prevoza i potrošnje.

Za dalje studije — privremeni zaključak

Raspravljali smo o nekim problemima urbanizacije u Japanu i upotrebili samo neke primere. Ovaj članak ne može obuhvatiti sve te probleme; trebaće nam još mnoge studije, kao npr.:

Kakvi elementi i razlozi se međusobno kombiniraju kod nastanka hipertrofičnog urbanizma? Tako npr. u Tokiju se realizira 20 % dohoda iz produkcije, 30 % iz prodaje na veliko (po vrednosti), 58 % od svih direkcija najvećih preduzeća, u njemu je 50 % svih japanskih studenata, itd.

A za izbegavanje »prirodnih katastrofa« trebaće nam mnogo više studija pojedinih slučajeva da bismo otkrili nedovoljnost naših upravnih protivkatastrofnih shema i mera. Zbog toga bi socijalno-istorijska i urbana geografija trebale da tesno sarađuju s urbanističkom tehnologijom i fizičkom geografijom, a osobito sa geologijom površinskih kvartarnih slojeva, što su naročito važni za japanske gradove koji leže na mekanim naplavinama.