

Městská krajina

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Geografický ústav PřF MU Brno

URS, 20.3.2014



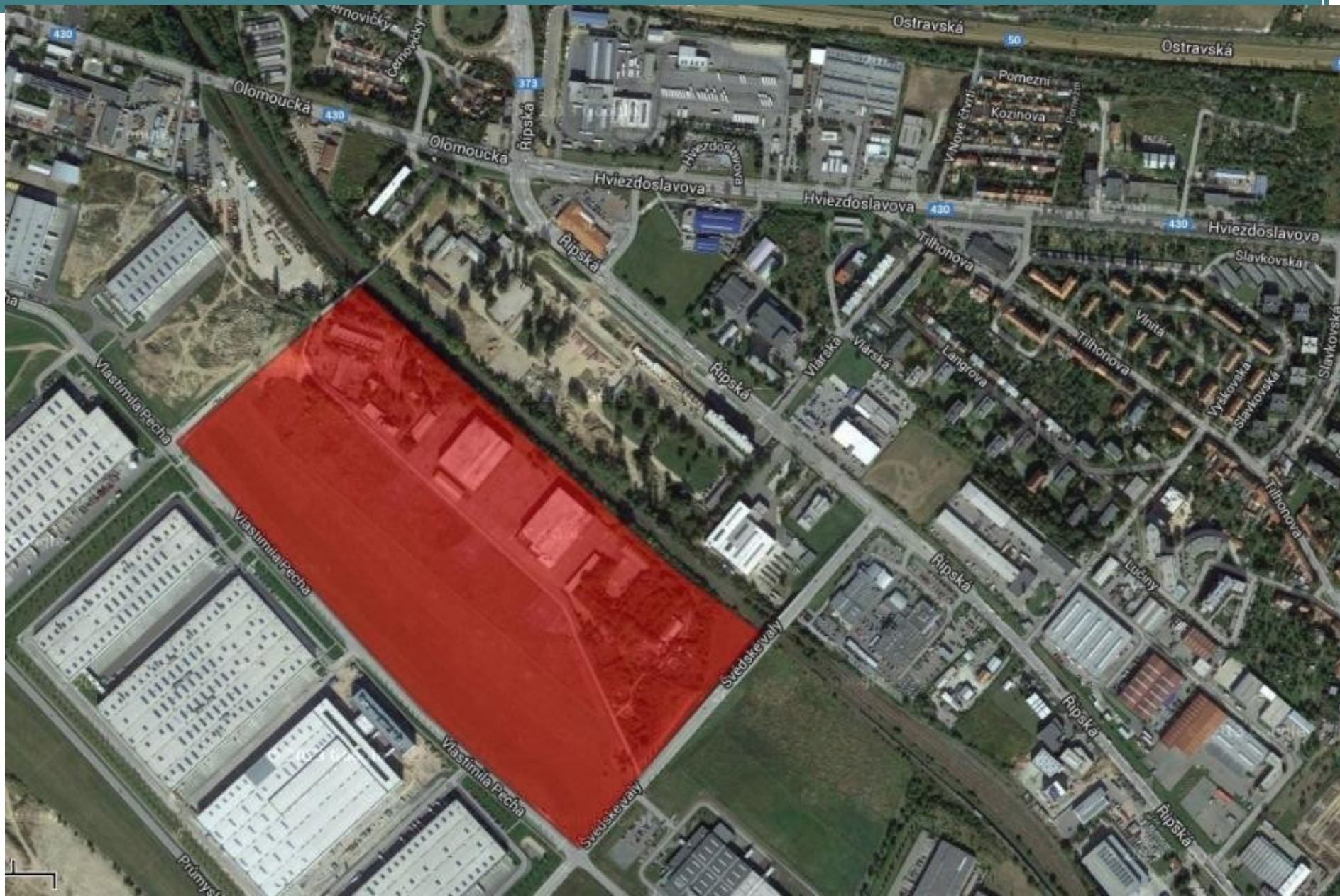




PLÁN UMÍSTĚNÍ VELKOSKLADU AMAZON V BRNĚ



Brněnská průmyslová zóna - Černovická terasa o rozloze 200 ha se nachází v blízkosti mezinárodního letiště Brno - Tuřany, dálnic D1, D2 a železniční tratě Brno - Vlárský průsmyk (Slovensko). Patří k předním strategickým zónám na území České republiky. Firma Amazon by mohla v Brně investovat okolo 100 milionů eur (přes 27 miliard Kč) a vytvoří minimálně 1500 pracovních míst.









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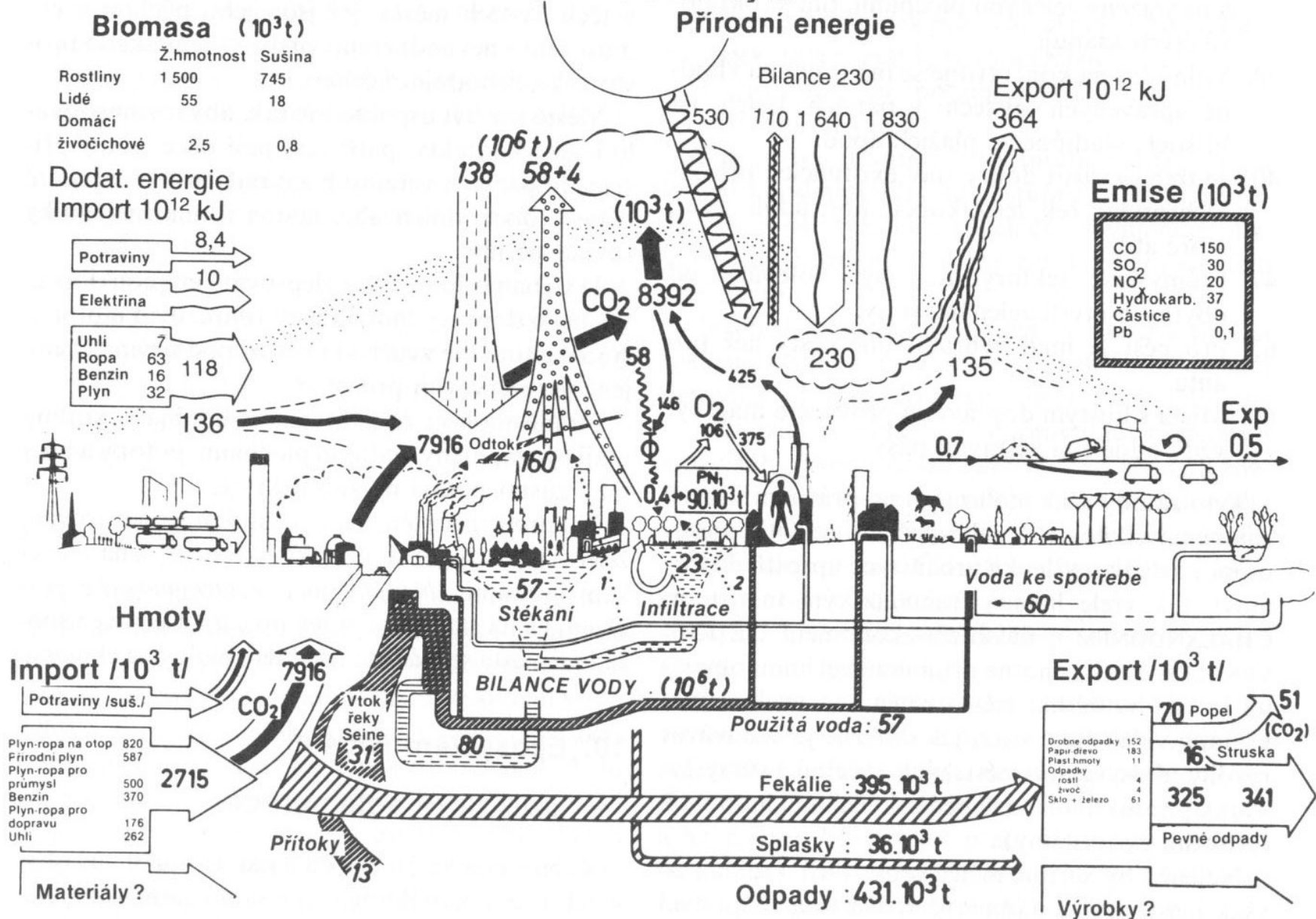
Jihomoravský kraj nabídne Amazonu pozemky u brněnského letiště

•20. března 2014 10:56, aktualizováno 14:22

Jihomoravští radní dopoledne schválili nabídku krajských pozemků pro stavbu haly společnosti Amazon. Hejtman Michal Hašek (ČSSD) na mimořádné tiskové konferenci upřesnil, že jde o pozemky u brněnského letiště v Tuřanech.

Zdroj: http://brno.idnes.cz/radni-schvalili-haskuv-navrh-di5-/brno-zpravy.aspx?c=A140320_104926_brno-zpravy_daj

EKOSYSTÉM BRUSEL / 16 178 ha, 1 029 000 obyvj./



Obr. 6.15 Ekosystém „urbs“. Struktura a metabolismus ekosystému Brusel (podle DUVIGNEAUDA a DENAEYEROVÉ 1976–79, upraveno). (Vysvětlivky v textu.)

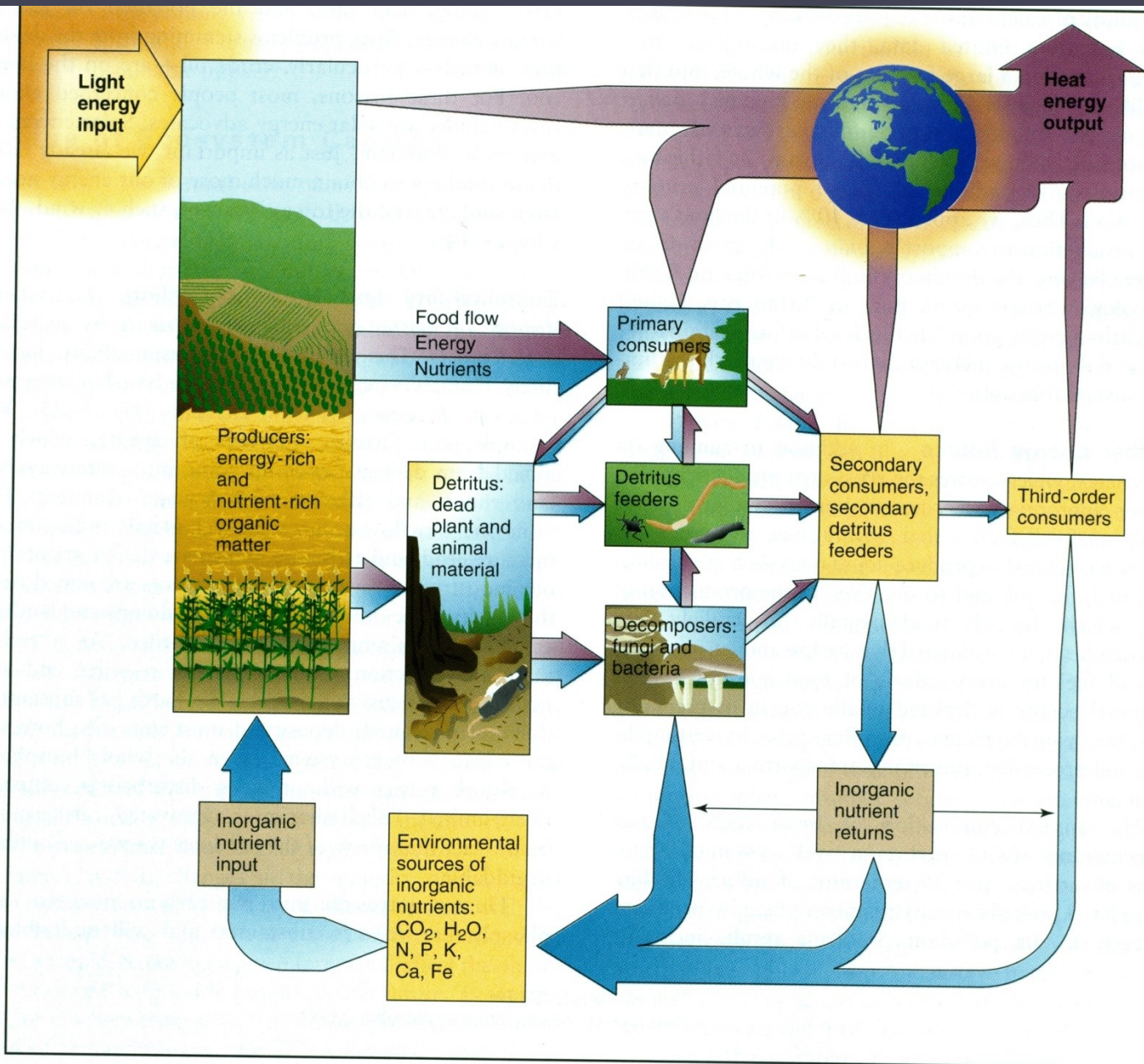


Figure 3-22 Nutrient recycling and energy flow through an ecosystem. Arranging organisms by feeding relationships and depicting the energy and nutrient inputs and outputs of each relationship shows a continuous recycling of nutrients (blue) in the ecosystem, a continuous flow of energy through it (red), and a decrease in biomass in it (thickness of arrows).

THE HUMAN SYSTEM
How can we make it into a sustainable cycle?

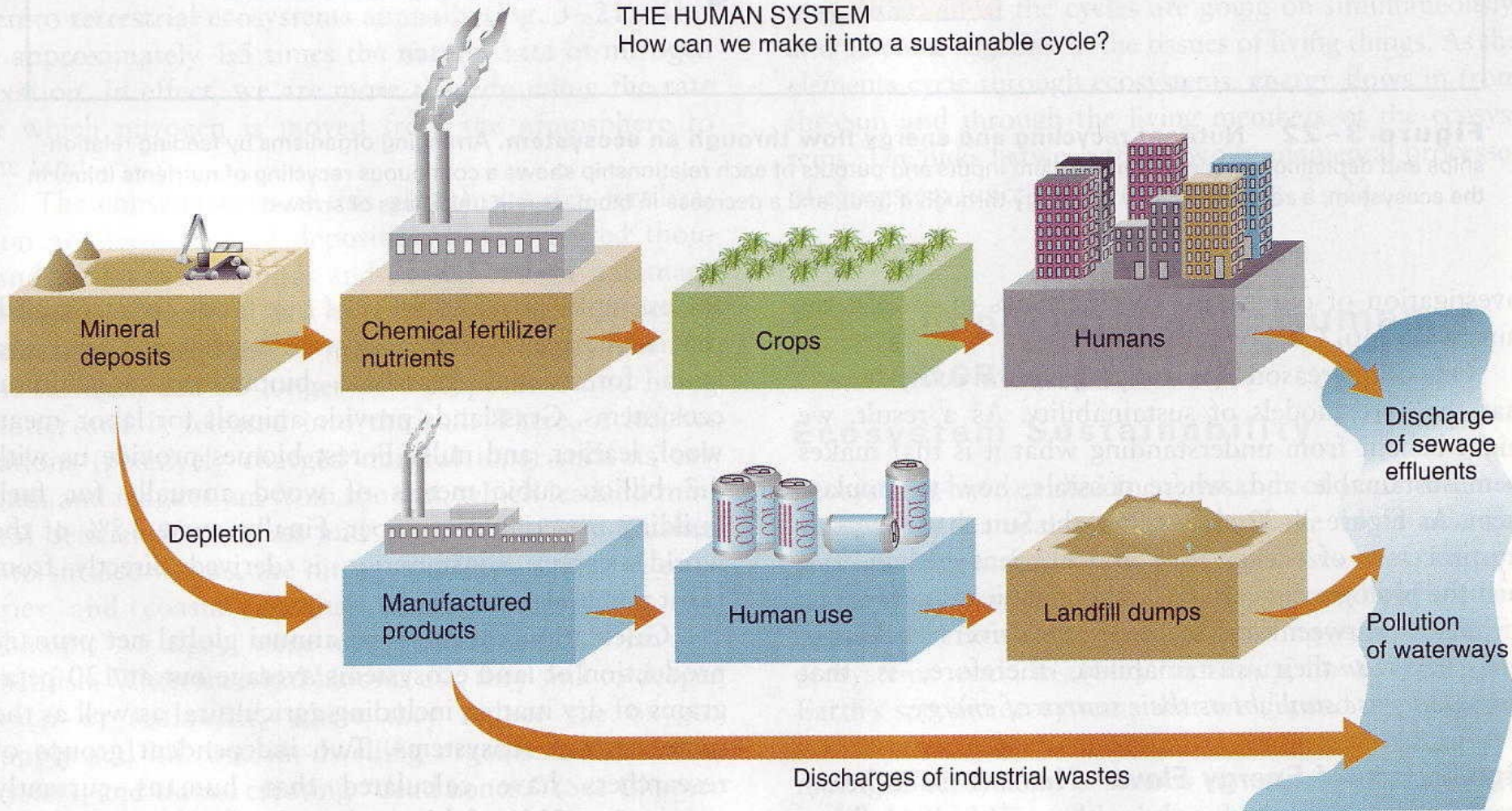
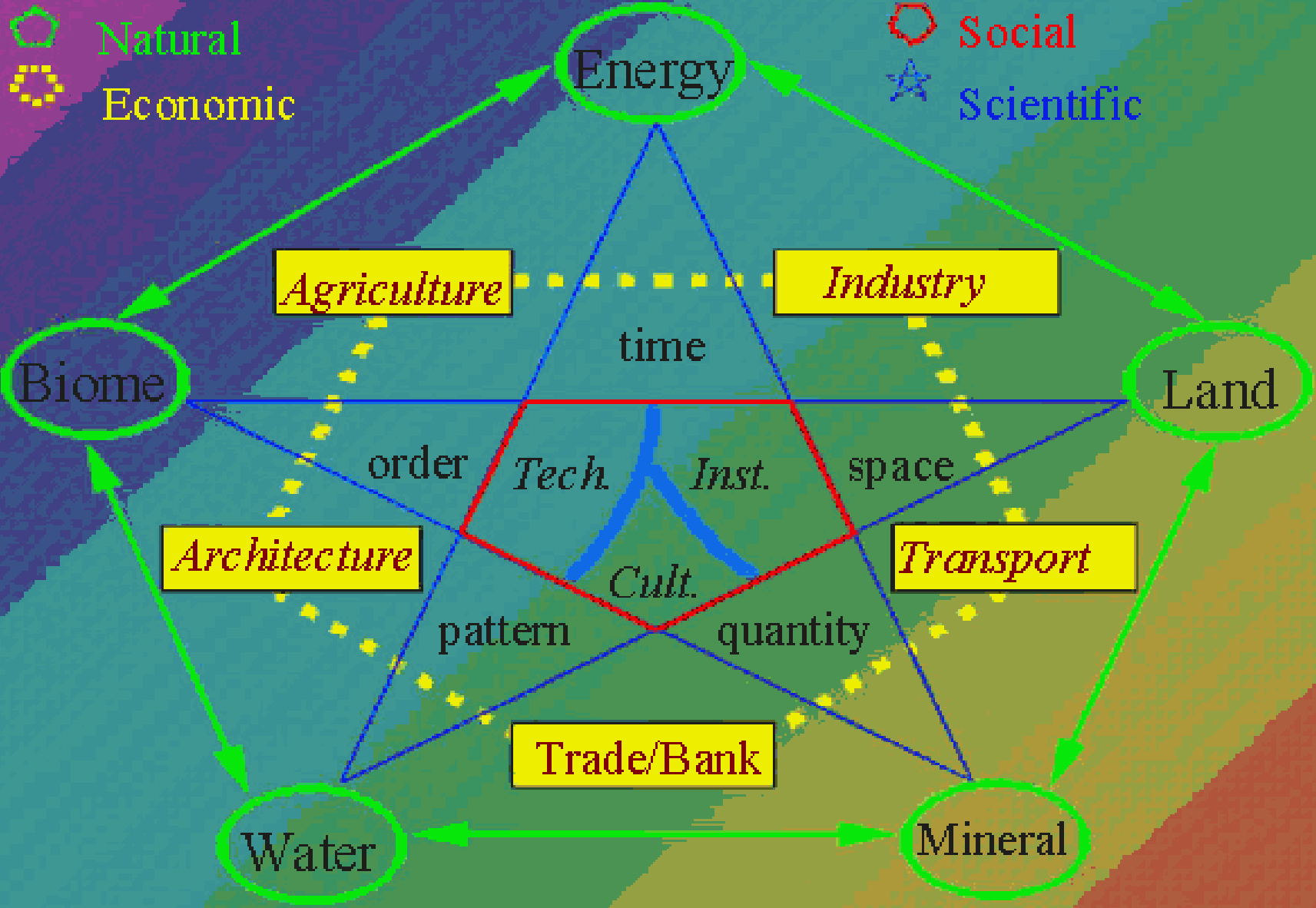


Figure 3-23 One-directional nutrient flow in human society.

Urban Eco-Complex



Urban Sustainability





Urban Social-Ecological System

SOCIAL

High population density

Centers of power,
economy and culture

Concentration of
energy and resource use

High degree of social
heterogeneity
(spatial, temporal, organisational)

Development through
growth
in population and size

Large share of land
built up or covered by
impervious surfaces

Small scale mosaic
of different land uses

Abundance in land use interests
(competition of land use)

Frequent changes in land use

Pollution of air, water, soil

Noise and light pollution

High intensity of
urban nature management

Multiple interests
in urban nature

ECOLOGICAL

Changed local climate
(dry/windy/warm)

Changed hydrology
(less evapotranspiration)

Changed species composition
(more generalist species,
less specialists, more exotics)

High frequency of human
induced disturbances

Small, scattered patches
of nature surrounded by
hostile landscape matrix

Limited space for
ecological dynamics

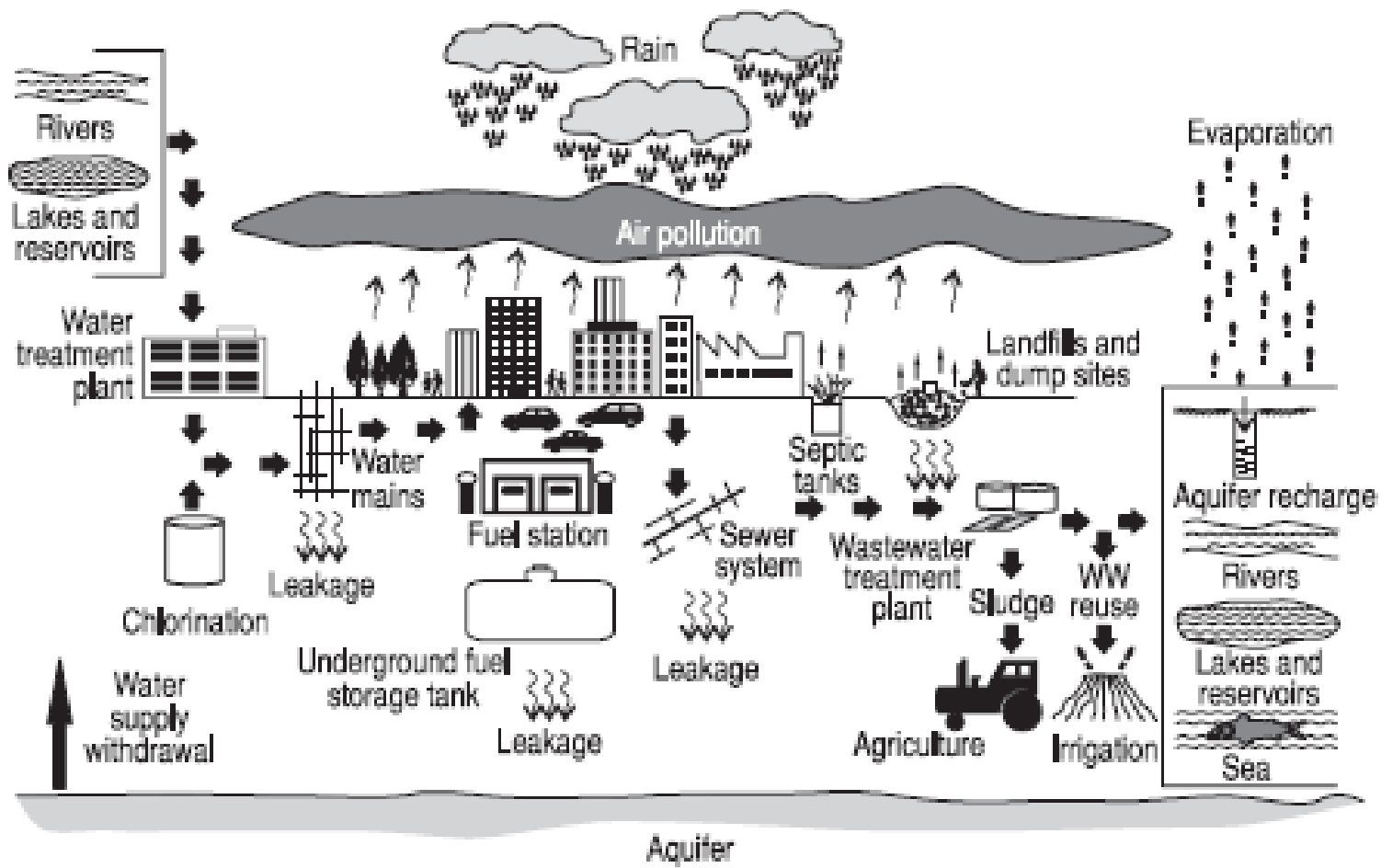


Figure 1.1 Urban water cycle

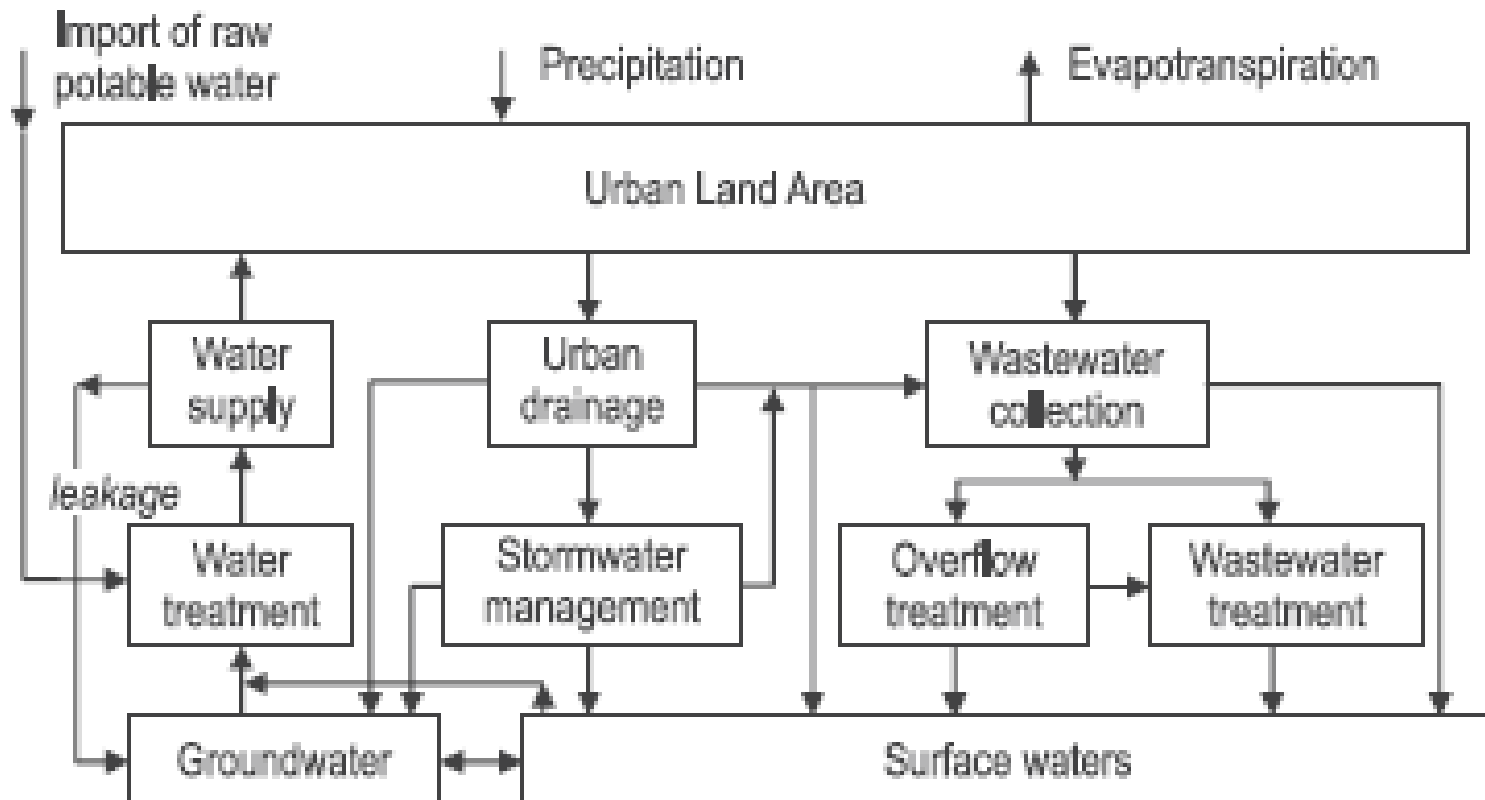


Figure 1.7 Urban water cycle – main components and pathways

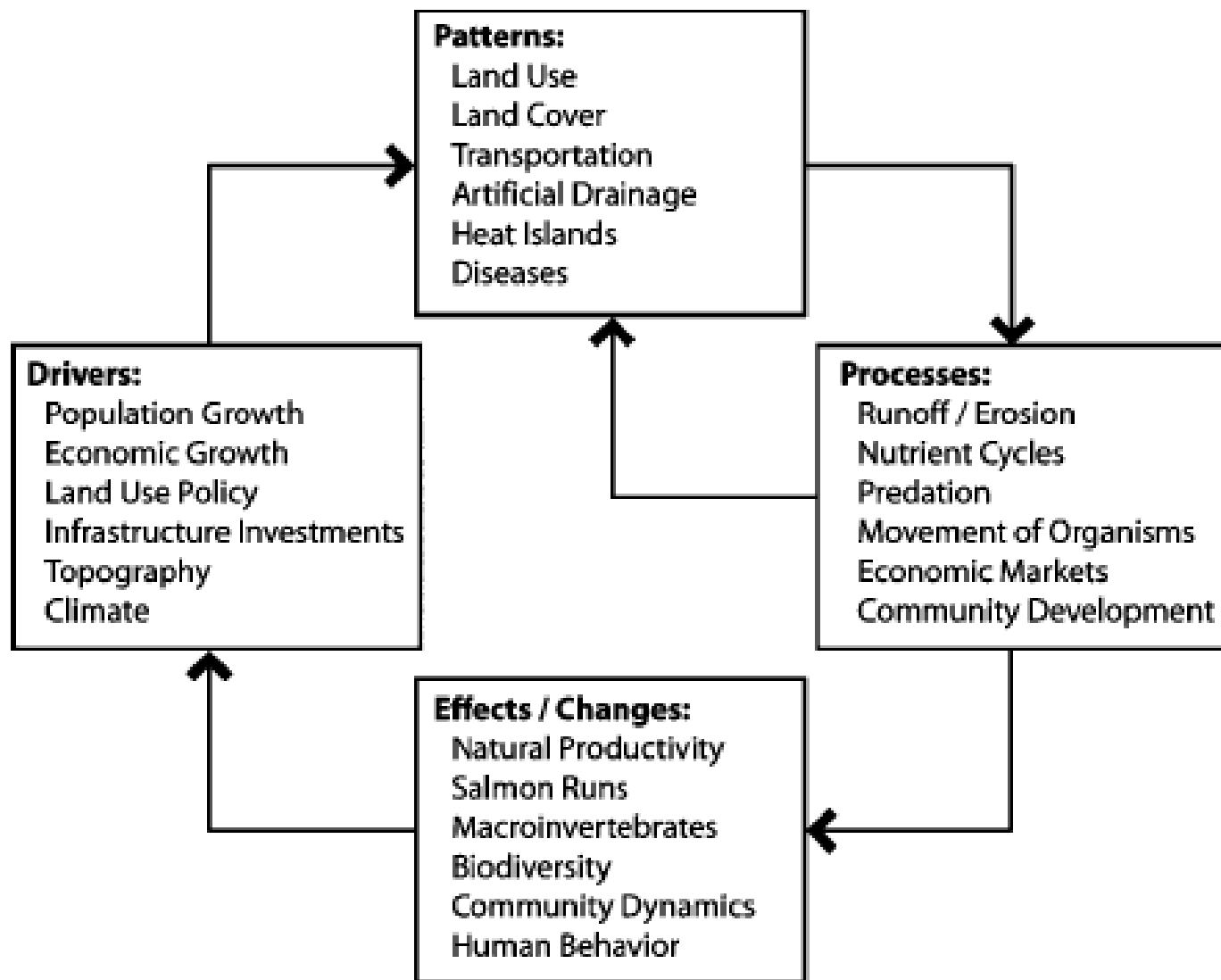


Figure 1.7. Urban ecology conceptual framework. The model represents the relevant interactions and feedbacks of coupled human-biophysical systems in urban ecosystems and constitutes the conceptual framework for the Seattle Urban Ecology Research site (Alberti et al. 2003, p. 1175, © American Institute of Biological Sciences).

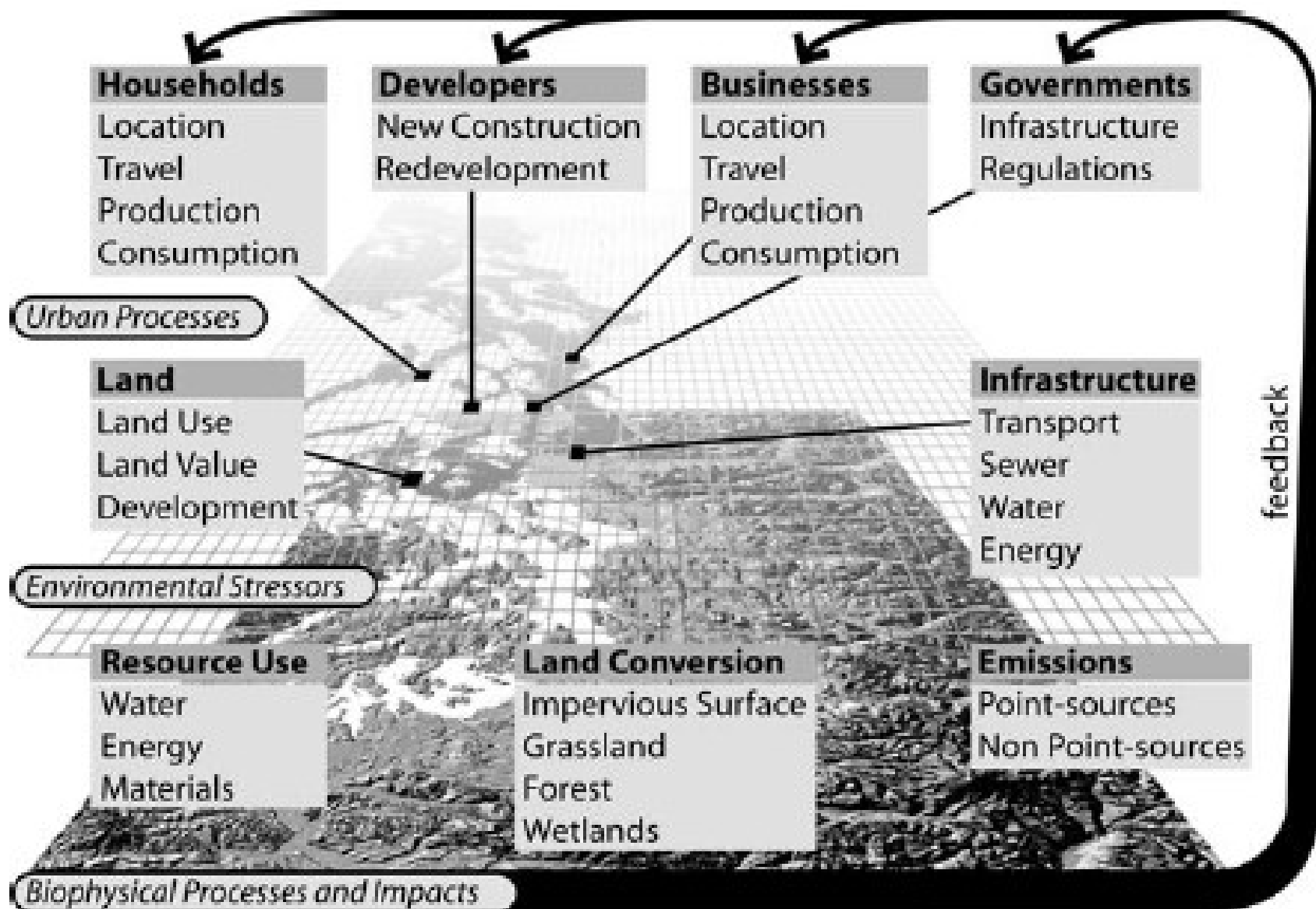
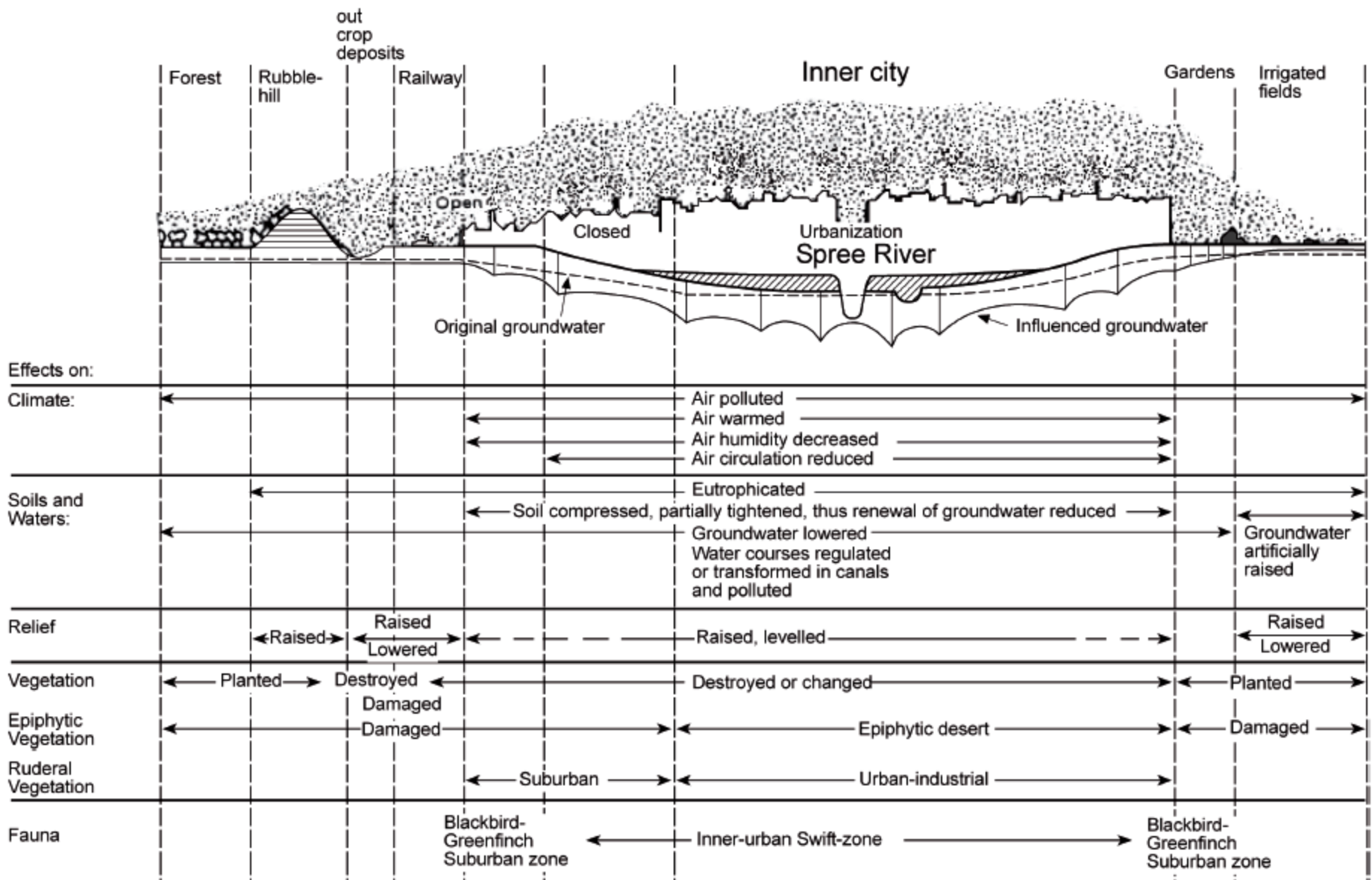
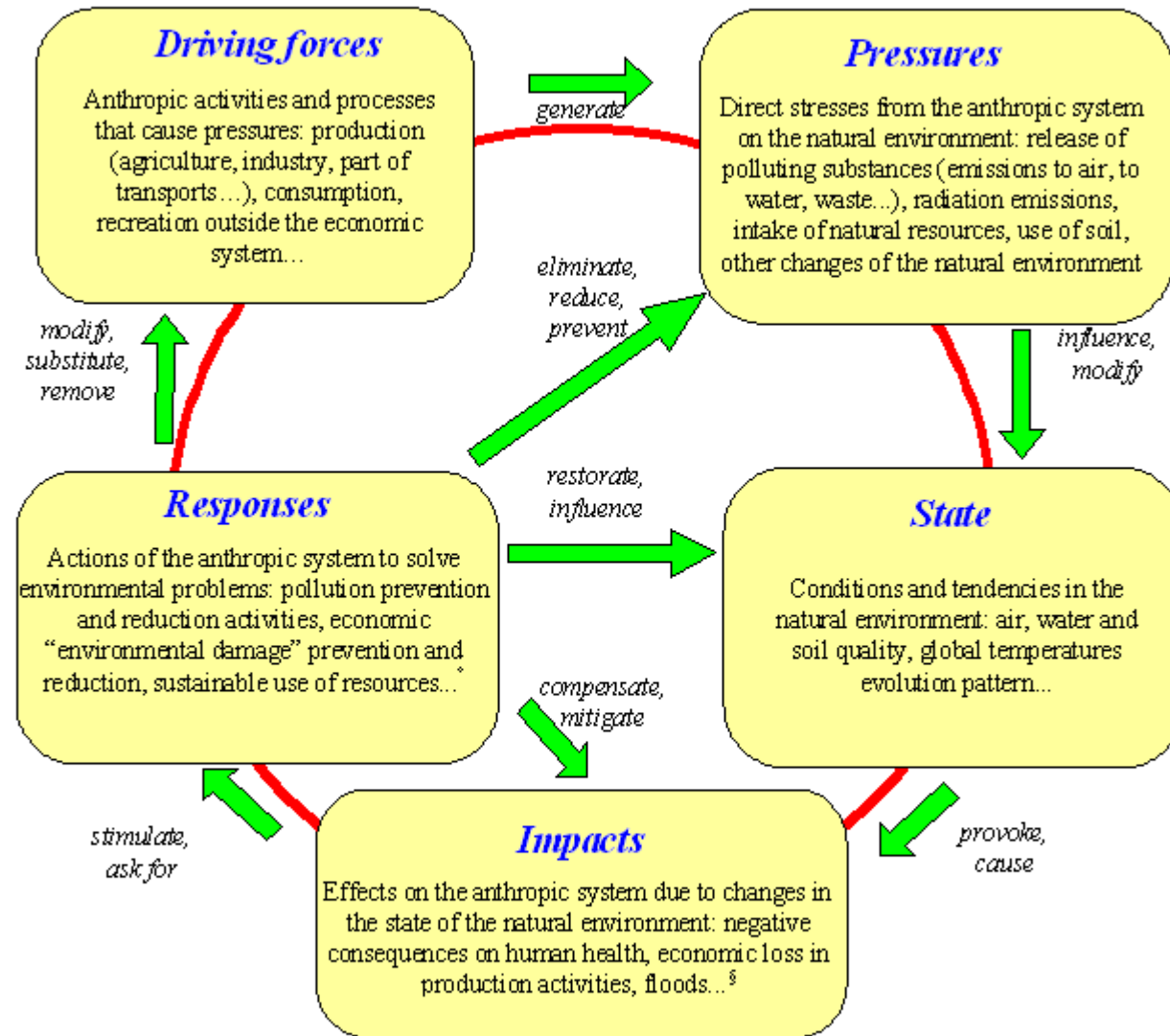


Figure 2.2. Integrated ecological and urban development model (PRISM 2000, revised).





SLUŽBY EKOSYSTÉMŮ

Podpůrné

- OBĚH ŽIVIN
- TVORBA PŮDY
- PRIMÁRNÍ PRODUKCE
- ...

Zásobovací

- POTRAVA
- SLADKÁ VODA
- DŘEVO A VLÁKNA
- PALMO
- ...

Regulační

- REGULACE PODNEBÍ
- REGULACE ZÁPLAV
- REGULACE NEMOCÍ
- ČIŠTĚNÍ VODY
- ...

Kulturní

- ESTETICKÉ
- DUCHOVNÍ
- VZDĚLÁVACÍ
- REKREAČNÍ
- ...

ŽIVOT NA ZEMI - BIOLOGICKÁ ROZMANITOST

SLUŽBY EKOSYSTÉMŮ

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- REKREAČNÍ
- ...

ŽIVOT NA ZEMI - BIOLOGICKÁ ROZMANITOST

SLOŽKY BLAHOBYTU

Jistoty

- OSOBNÍ BEZPEČNOST
- JISTÝ PŘÍSTUP KE ZDROJŮM
- BEZPEČÍ PŘED POHROMAM

Základní materiál pro dobrý život

- POSTAČUJÍCÍ ŽIVOBYTÍ
- DOSTATEČNÁ VÝŽIVNÁ STRAVA
- PŘÍSTŘEŠÍ
- PŘÍSTUP KE ZBOŽÍ

Zdraví

- SÍLA
- POCIT ZDRAVÍ
- PŘÍSTUP K ČISTÉMU VZDUCHU A VODĚ

Dobré společenské vztahy

- SPOLEČENSKÁ SOUDRŽNOST
- VZÁJEMNÁ ÚCTA
- SCHOPNOST POMÁHAT OSTATNÍM

Svoboda volby a činu

PŘÍLEŽITOST MOCI DOSÁHNOUT TO, CO JEDINEC POVAŽUJE ZA HODNOTNÉ DĚLAT A BÝT

Zdroj: Millennium Ecosystem Assessment

BARVA ŠÍPKY

Potenciál pro zprostředkování socioekonomickými faktory

 malý

 střední

 vysoký

TLOUŠTKA ŠÍPKY

Síla vazby mezi službou ekosystému a lidským blahobytem

 slabá

 střední

 silná

← krátkodobé →
← dlouhodobé →

GLOBALNÍ

REGIONÁLNÍ

MÍSTNÍ

Lidský blahobyt a snižování chudoby

- Základní materiál pro dobrý život
- Zdraví
- Dobré společenské vztahy
- Jistoty
- Svoboda volby a činu

Nepřímé hnací síly změn

- DEMOGRAFICKÉ
- EKONOMICKÉ (např. globalizace, obchod, trh, politický rámec)
- SOCIOPOLITICKÉ (např. vládnutí, institucionální a právní rámec)
- VĚDA A TECHNIKA
- KULTURNÍ A NÁBOŽENSKÉ (např. víry, spotřební volby)

Služby ekosystémů

- ZÁSOBOVACÍ (např. potrava, voda, vlákna a paliva)
- REGULAČNÍ (např. regulace klimatu, voda a nemoci)
- KULTURNÍ (např. duchovní, estetické, rekreační, vzdělávací)
- PODPŮRNÉ (např. primární produkce, tvorba půdy)

ŽIVOT NA ZEMI - BIOLOGICKÁ ROZMANITOST

Přímé hnací síly změn

- ZMĚNY MÍSTNÍHO VYUŽITÍ PŮDNÍHO KRYTŮ
- INTRODUKCE NEBO ODSTRANĚNÍ DRUHŮ
- PŘÍZPŮSOBNÍ A VYUŽÍVÁNÍ TECHNIKY
- VNĚJŠÍ VSTUPY (např. použití hnojiv, regulace škůdců, zavlažování)
- SKLIZEŇ A SPOTŘEBA ZDROJŮ
- ZMĚNA KLIMATU
- PŘÍRODNÍ, FYZICKÉ A BIOLOGICKÉ HNACÍ SÍLY (např. evoluce, sopky)

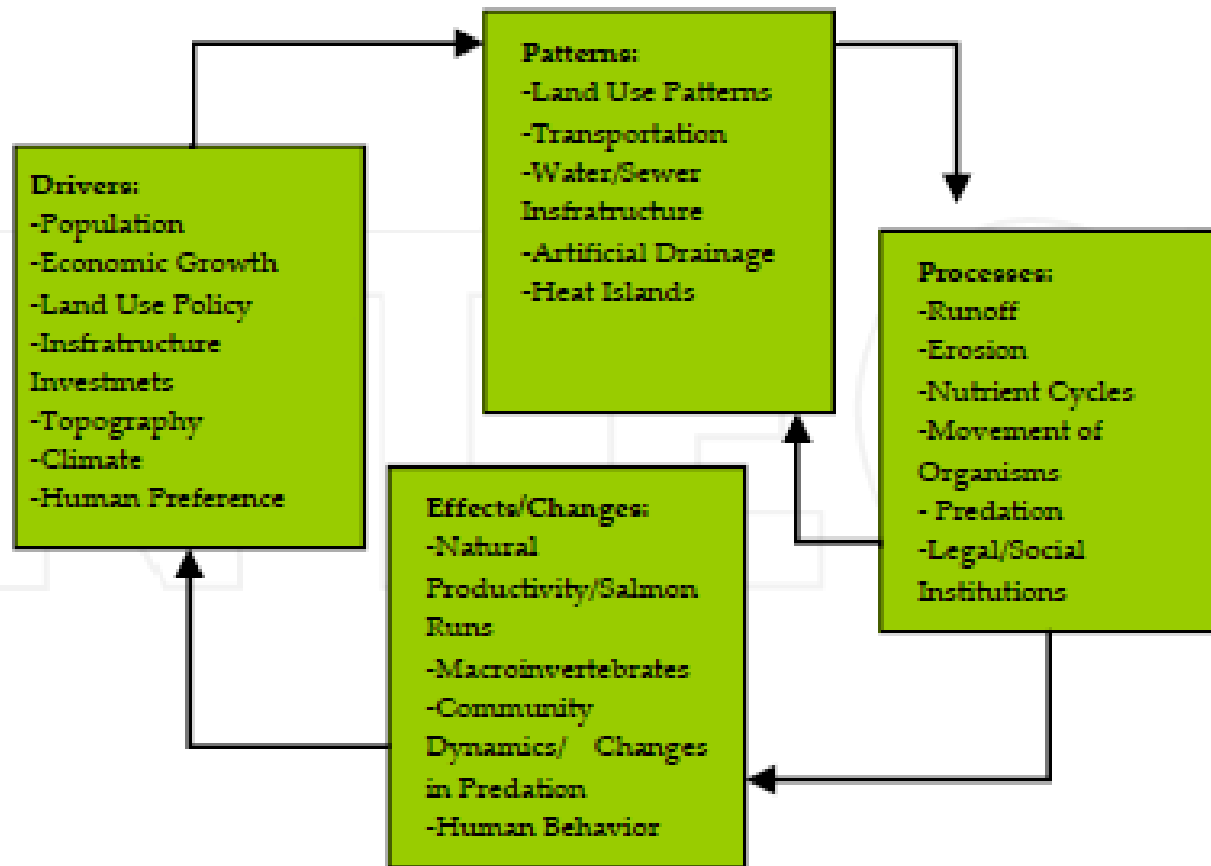
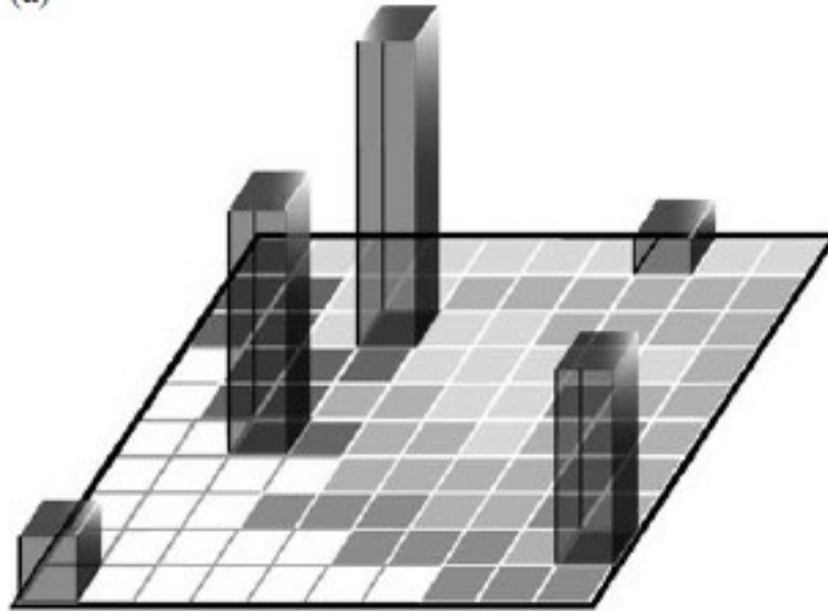


Figure 2. A scheme of urban ecology showing the relationships between humans and natural drivers which are influenced by the patterns and processes of abiotic and biotic drivers [5].

(a)



(b)

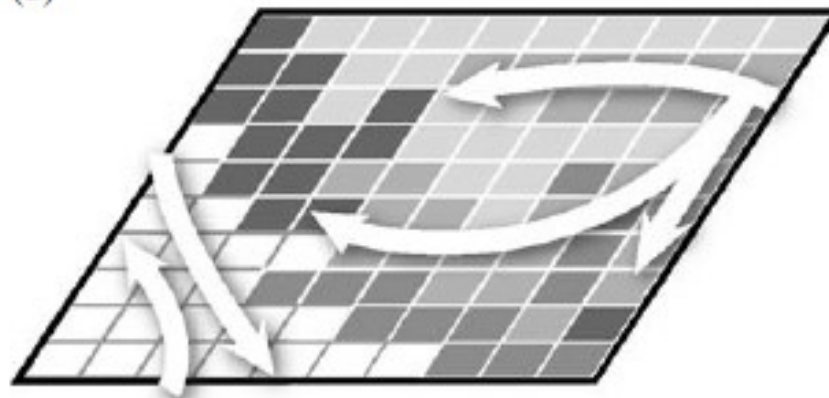
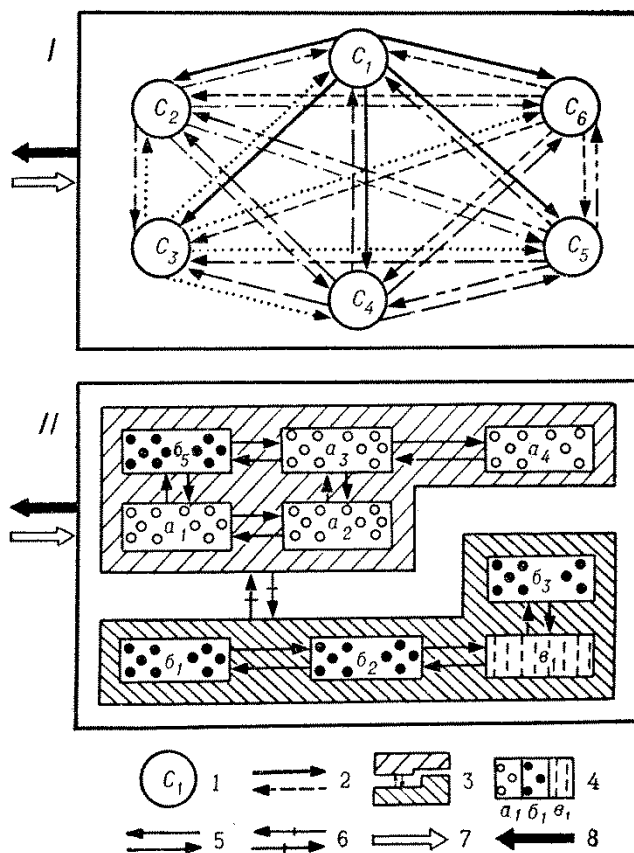


FIGURE 2.1. Schematic illustration of two general classes of ecosystem processes: (a) point processes and (b) lateral transfers.



Р и с. 56. Модели природных комплексов (по Преображенскому, 1969, стр. 28).

I — моносистемная модель, II — полисистемная модель; 1 — компоненты комплекса, 2 — связи между ними, 3 — природные комплексы ранга $n+1$; 4 — типы природных комплексов ранга $n+2$; 5 — связи между комплексами ранга $n+2$; 6 — связи между комплексами ранга $n+1$; 7—8 — внешние связи природных комплексов. Ранги считаются «сверху вниз»

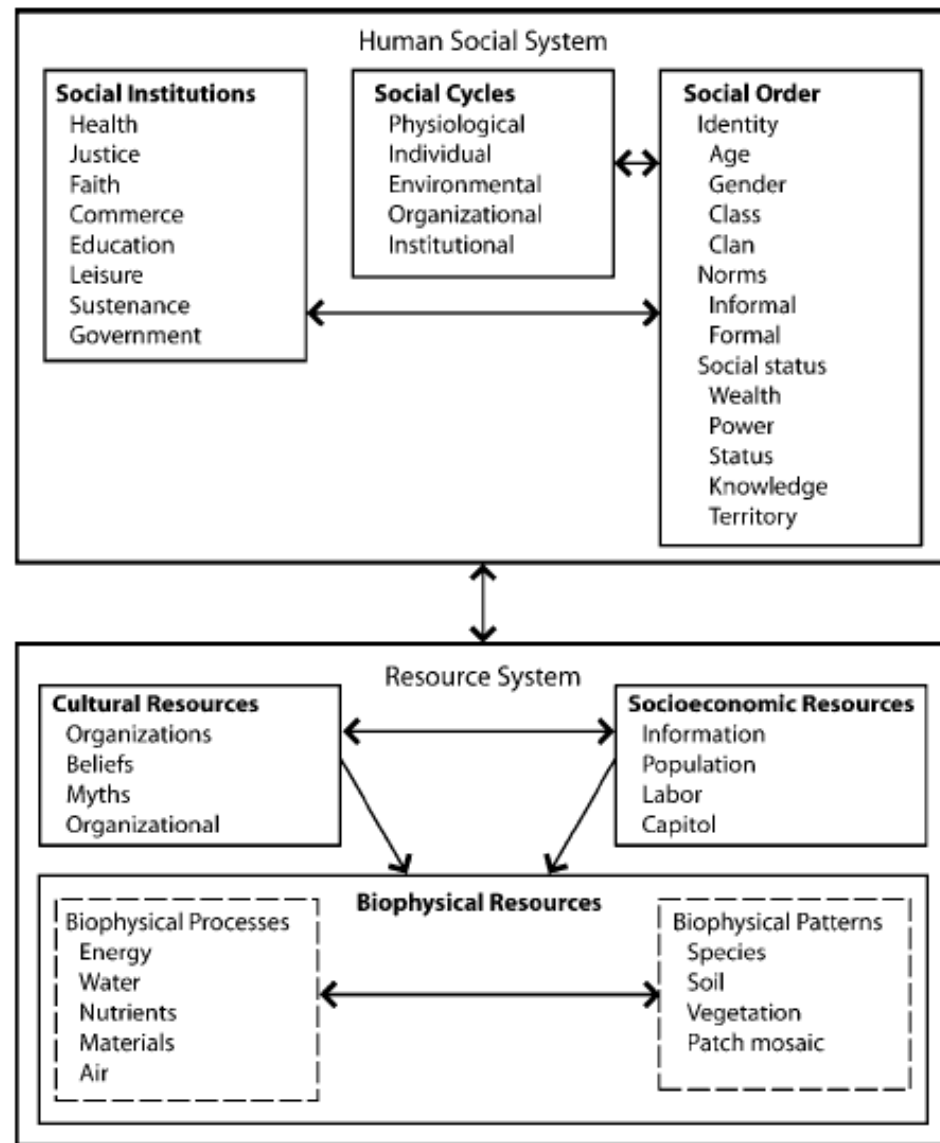


Figure 1.5. Human ecosystem framework. The model represents the relevant interactions and feedbacks of coupled human-biophysical systems in urban ecosystems and constitutes the conceptual framework for the Baltimore Long-Term Ecological Research (BES LTER) site (Pickett et al. 2001, p. 118).

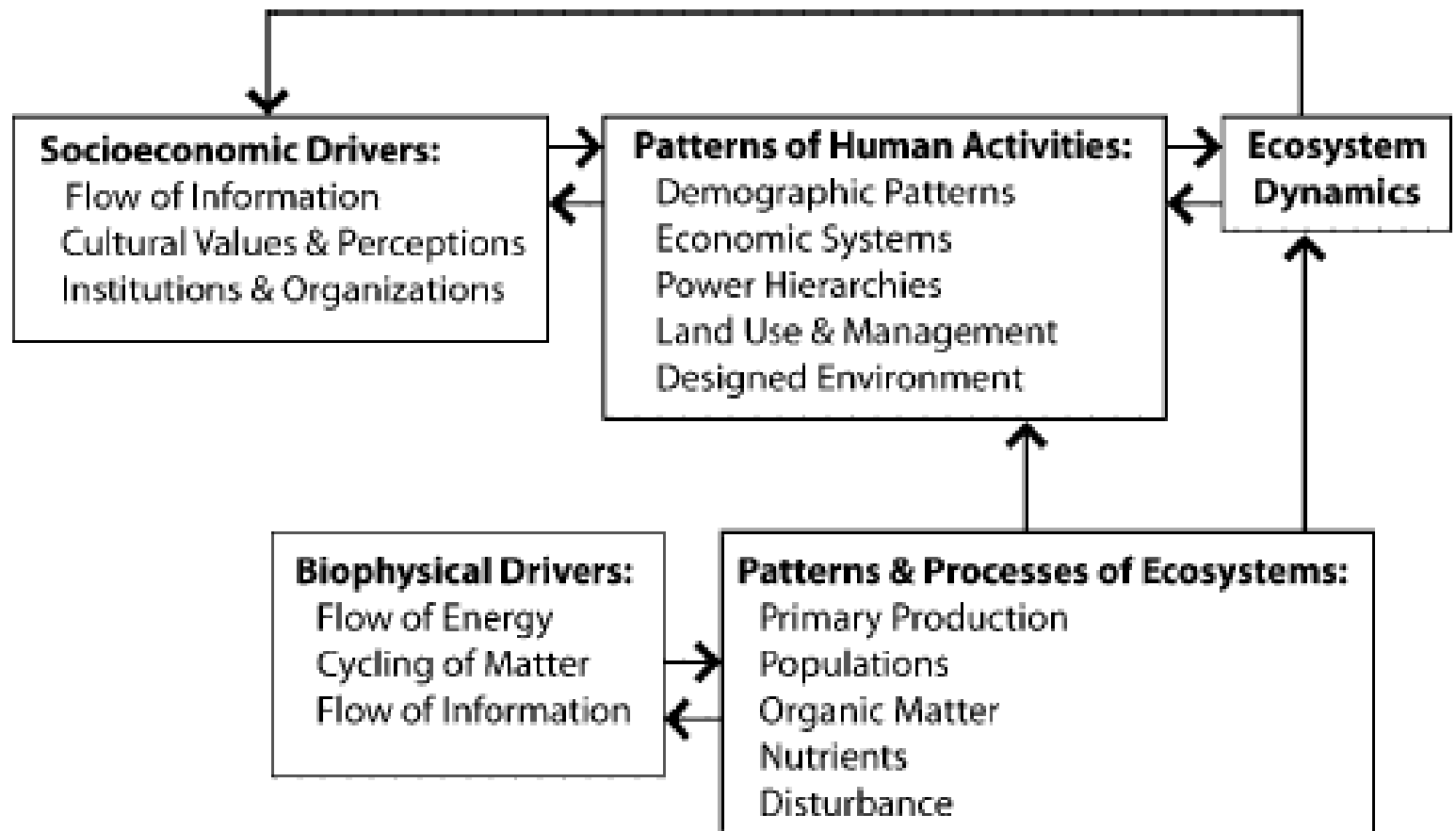


Figure 1.6. Ecosystem dynamics conceptual framework. The model represents the relevant interactions and feedbacks of coupled human-biophysical systems in urban ecosystems and constitutes the conceptual framework for the Central Arizona-Phoenix Long-Term Ecological Research (Grimm et al. 2000, p. 574, © American Institute of Biological Sciences).

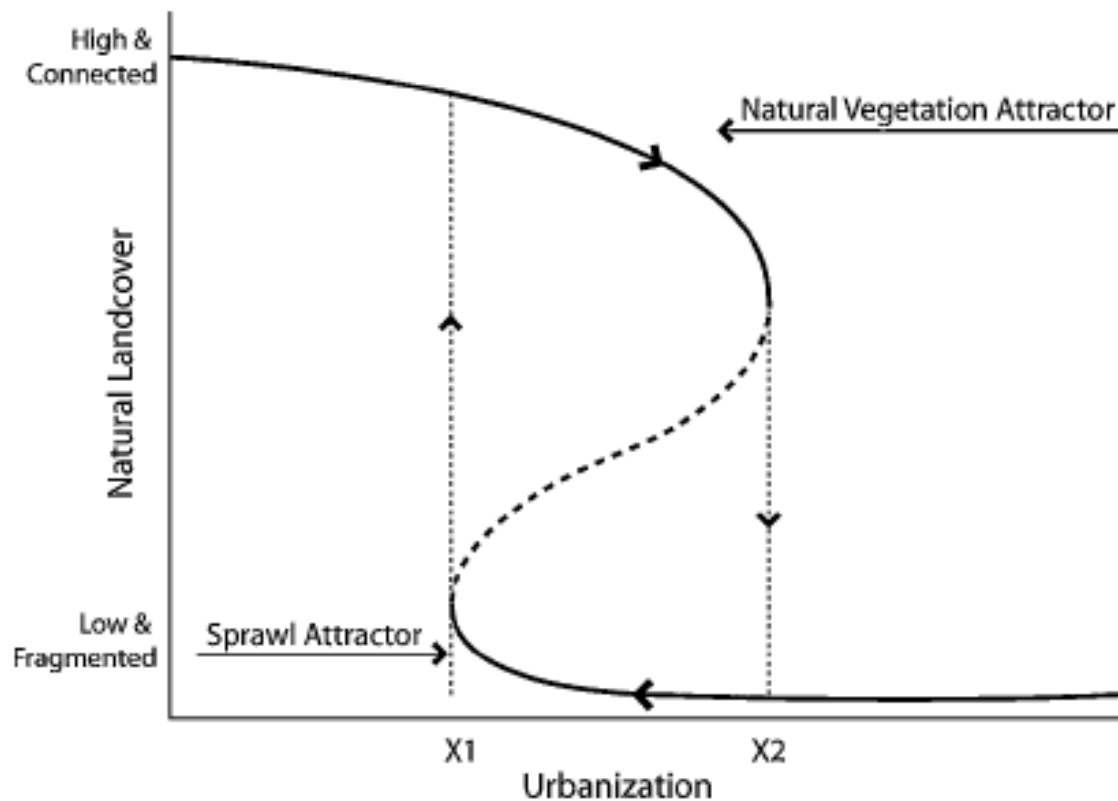


Figure 1.8. Impact of urbanization on resilience. From a system dynamics perspective, we can indicate that the state of an urban region is likely driven between natural and human function states by the amount of urbanization. As urbanization increases, natural vegetation decreases. The system moves along the upper solid line (Natural vegetation attractor) until a point (X2) is reached where natural vegetation is too degraded and fragmented to perform vital ecological functions and the system becomes unstable (dashed portion of curve). As urbanization reduces ecosystem function the system flips into a sprawl state (the lower solid line, sprawl attractor) where human functions replace ecosystem functions. Eventually, ecosystem function is degraded to a point that cannot support human function, urbanization declines and the system becomes unstable again (X1). The system eventually returns to the natural vegetation state. (Alberti and Marzluff 2004, p. 244).

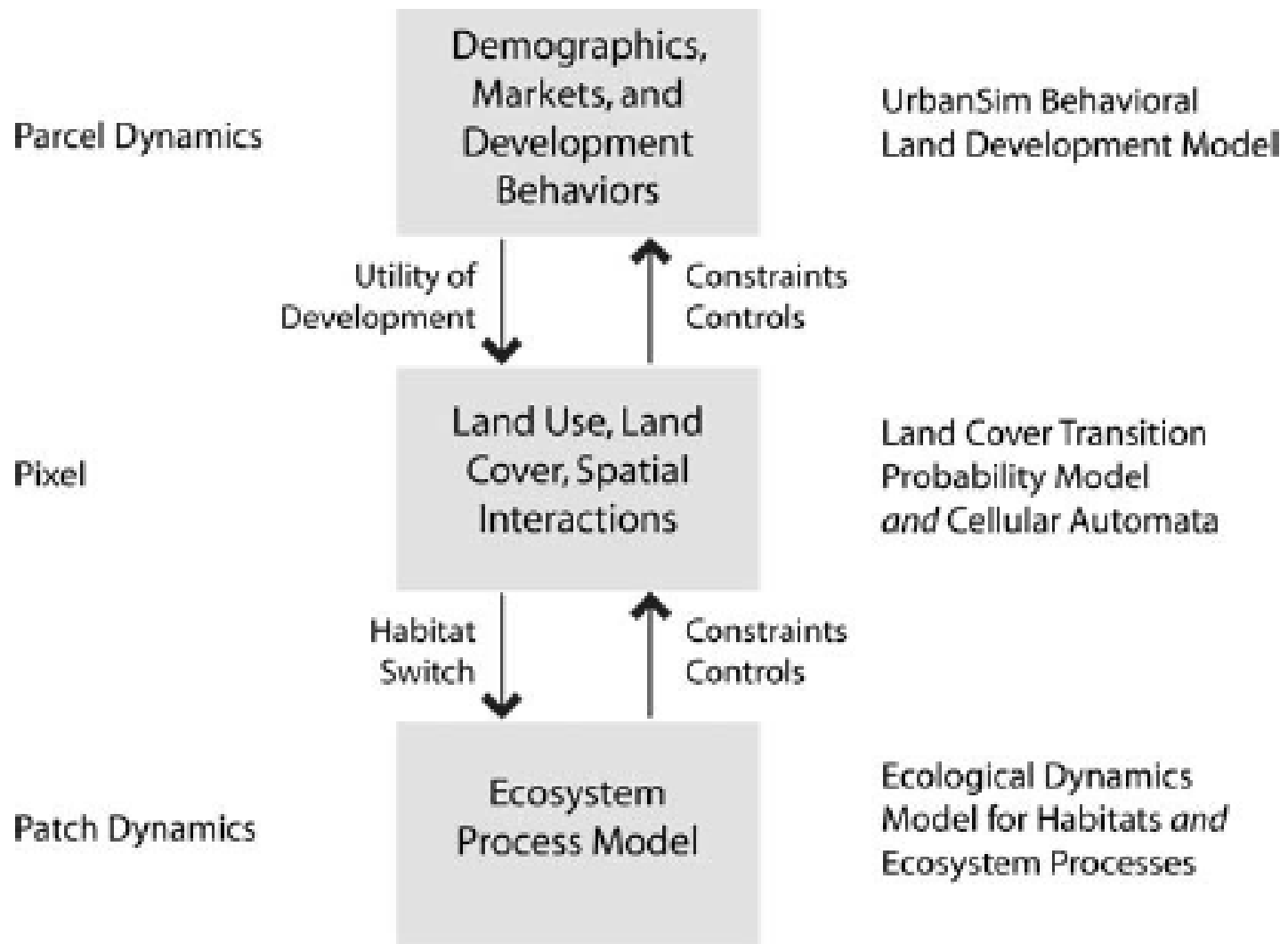


Figure 2.3. Biocomplexity model.

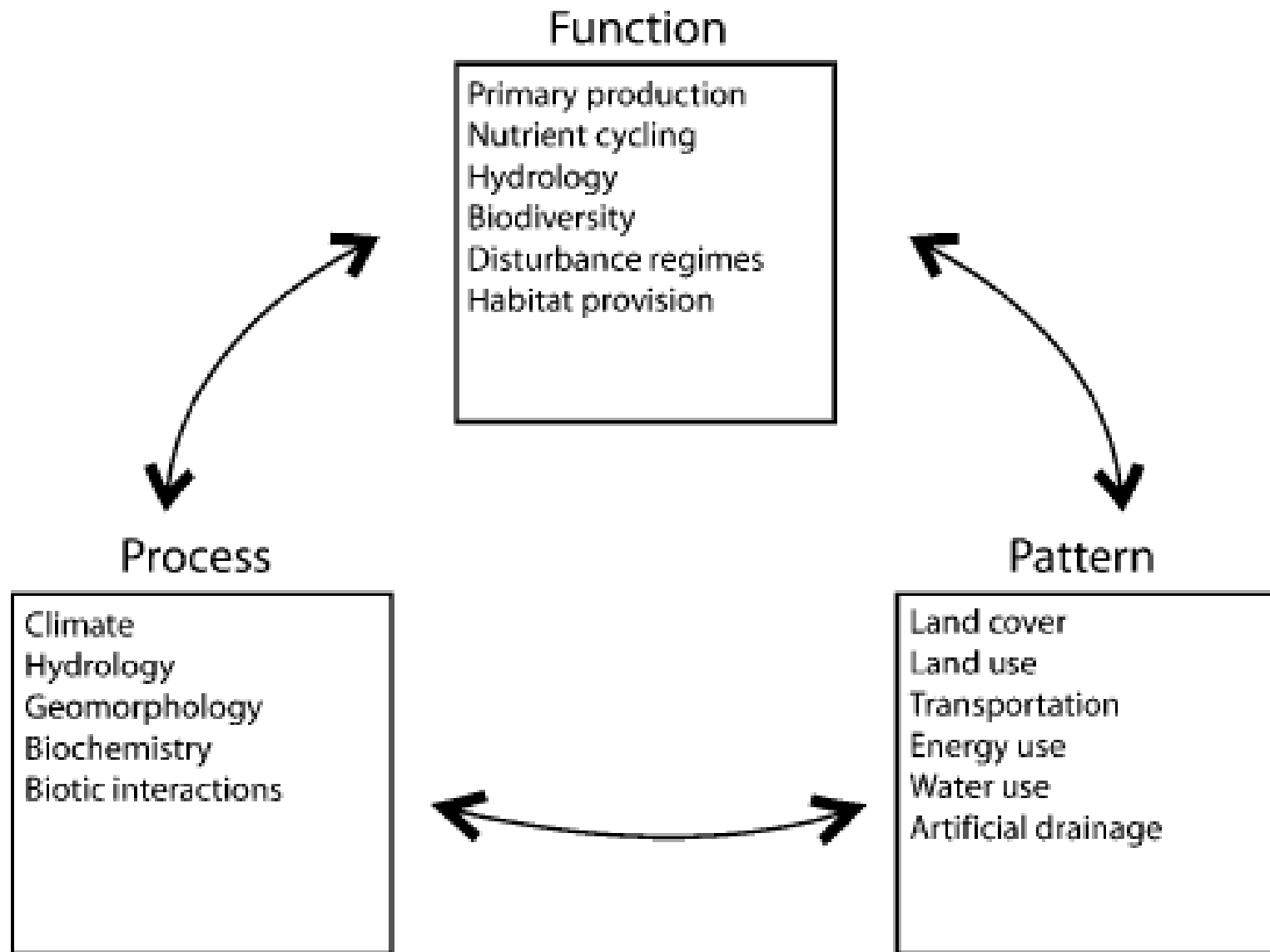


Figure 3.1a. Conceptual model of functions, processes, and patterns.

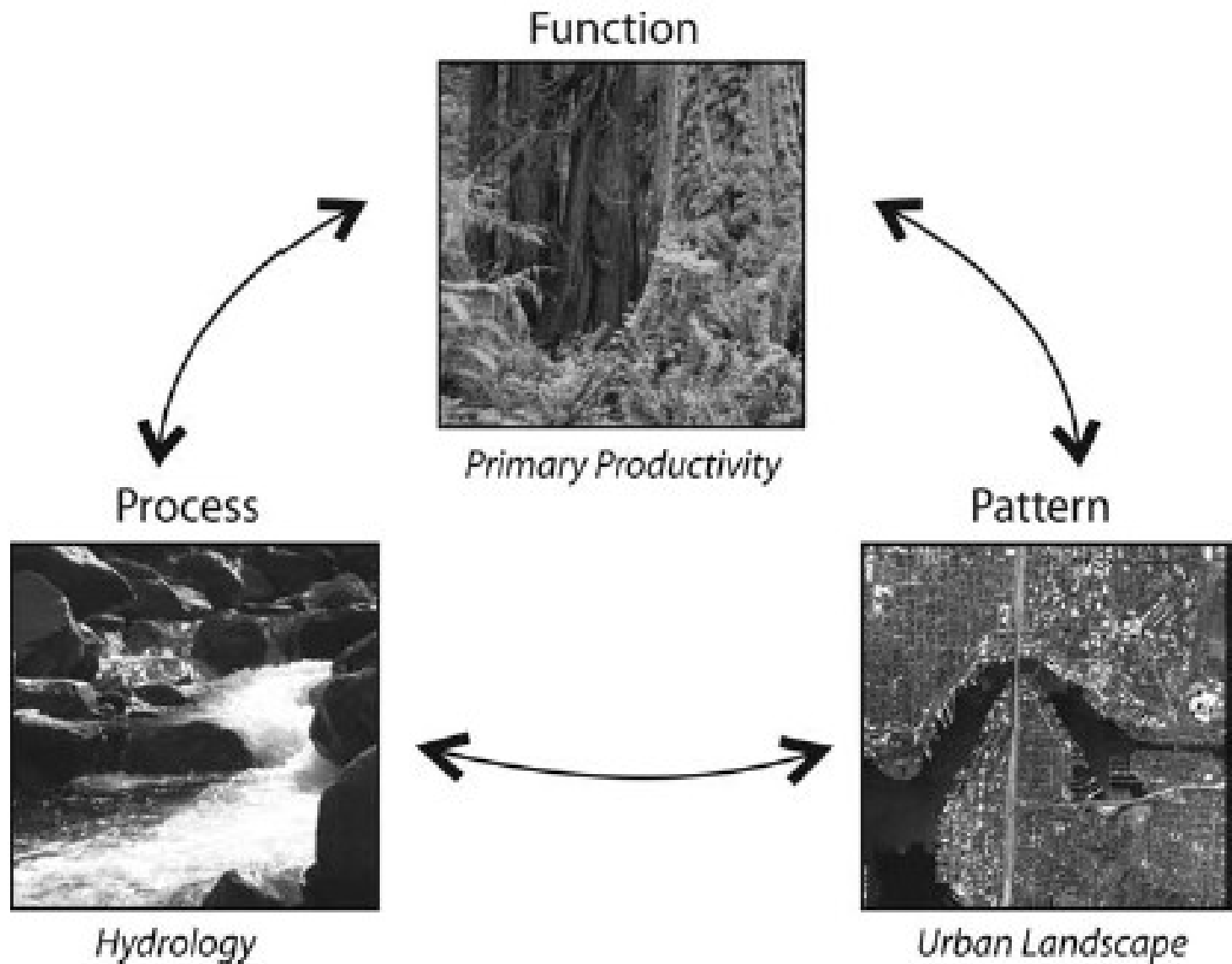
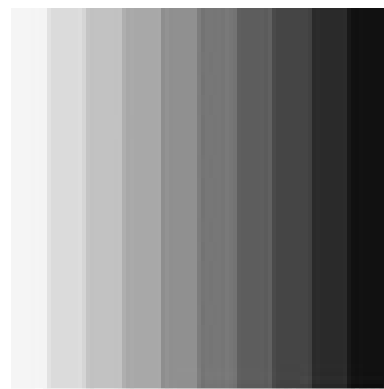
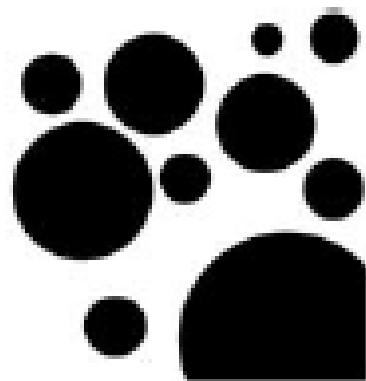


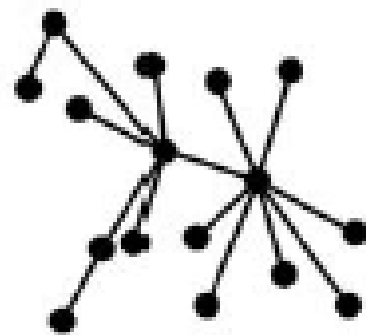
Figure 3.1b. Conceptual model of functions, processes, and patterns.



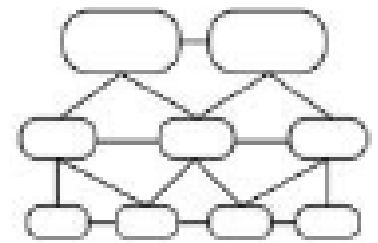
gradients



patches



networks



hierarchies

Figure 4.1. Approaches of urban ecological studies.

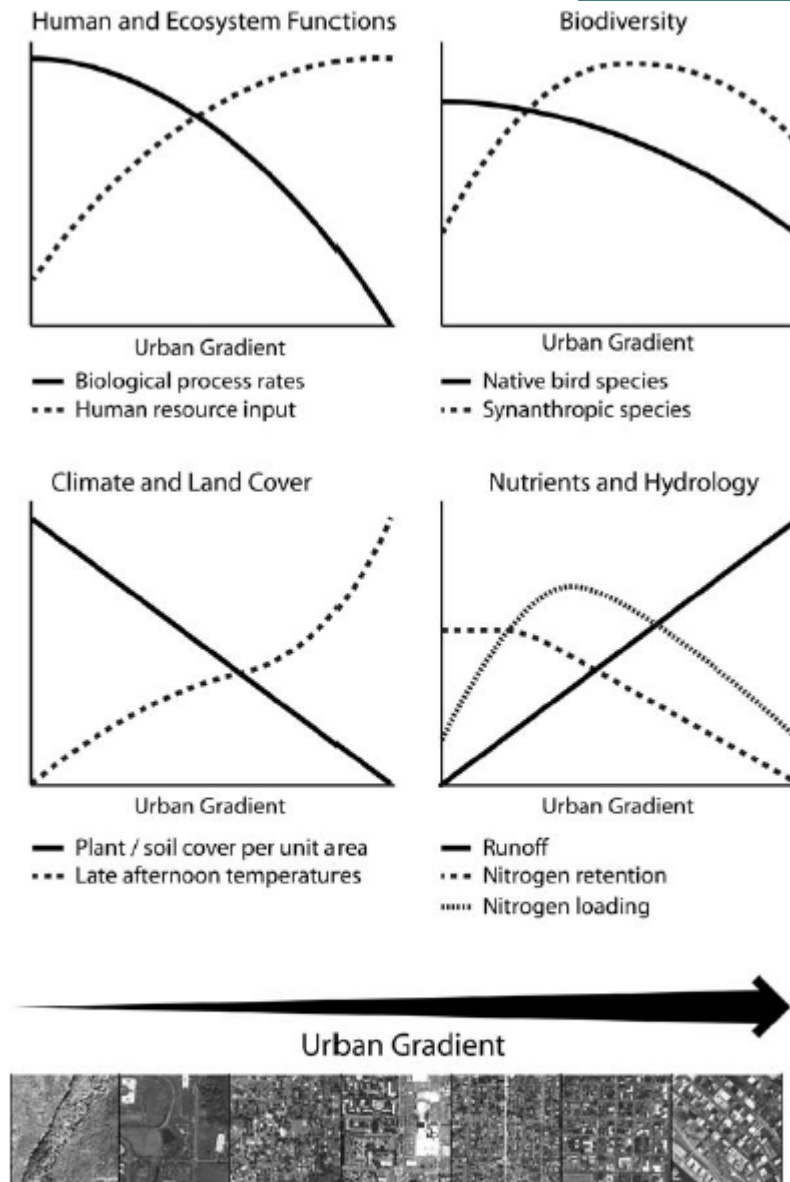


Figure 4.2. Urban gradient hypotheses. An illustration of hypothesized relationships between human and ecosystem functions and the urban-to-rural gradient.

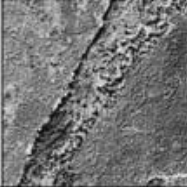

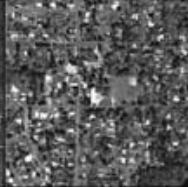





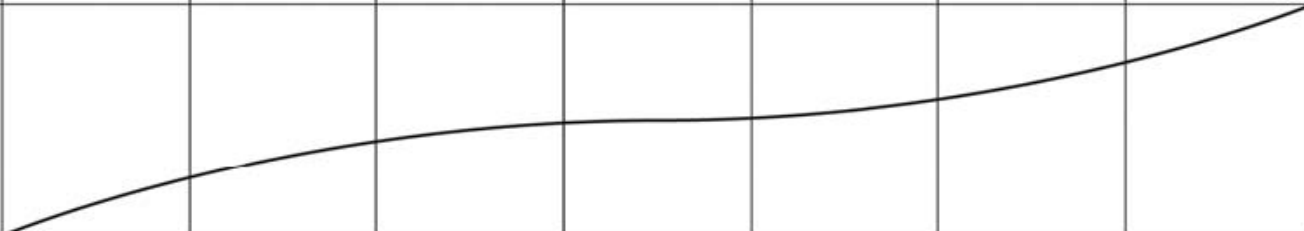
	Rural Natural	Mixed Use Institutional	Suburban Residential	Commercial Industrial	Medium Density Urban Residential	High Density Urban Residential	Downtown High Rise
Urban Gradient							
Degree of impact							
Late Afternoon Temperatures							
Roughness	4	5	6	5	7	7	8
Aspect ratio	>0.05*	0.1 - 0.5*	0.2 - 0.6*	0.05 - 0.2	0.5 - 1.5	1.0 - 2.5	>2
% Impervious	<10	<40	35-65	70-95	70-85	>85	>90

Figure 7.3. Relationship between the urban gradient and urban heat island. Based on Urban Terrain Zones (Ellefsen 1991) and Urban Climate Zones (Oke 2004) Late Afternoon temperatures are synthesized from Oke 1973. The temperature increases along the urban gradient. Roughness refers to the effective terrain roughness according to the Davenport classification (Davenport et al. 2000). The roughness Aspect ratio = ZH/W is average height of the main roughness elements (buildings and trees) divided by their average spacing. In the city center this is the street canyon height/width. The aspect ratio is related to flow regimes (Oke 1987) and thermal controls (shading and screening) (Oke 1982). Percent impervious reflect the proportion of ground plane that is covered with buildings, roads and other impervious areas. The amount of pervious ground cover affects soil moisture and evaporation.

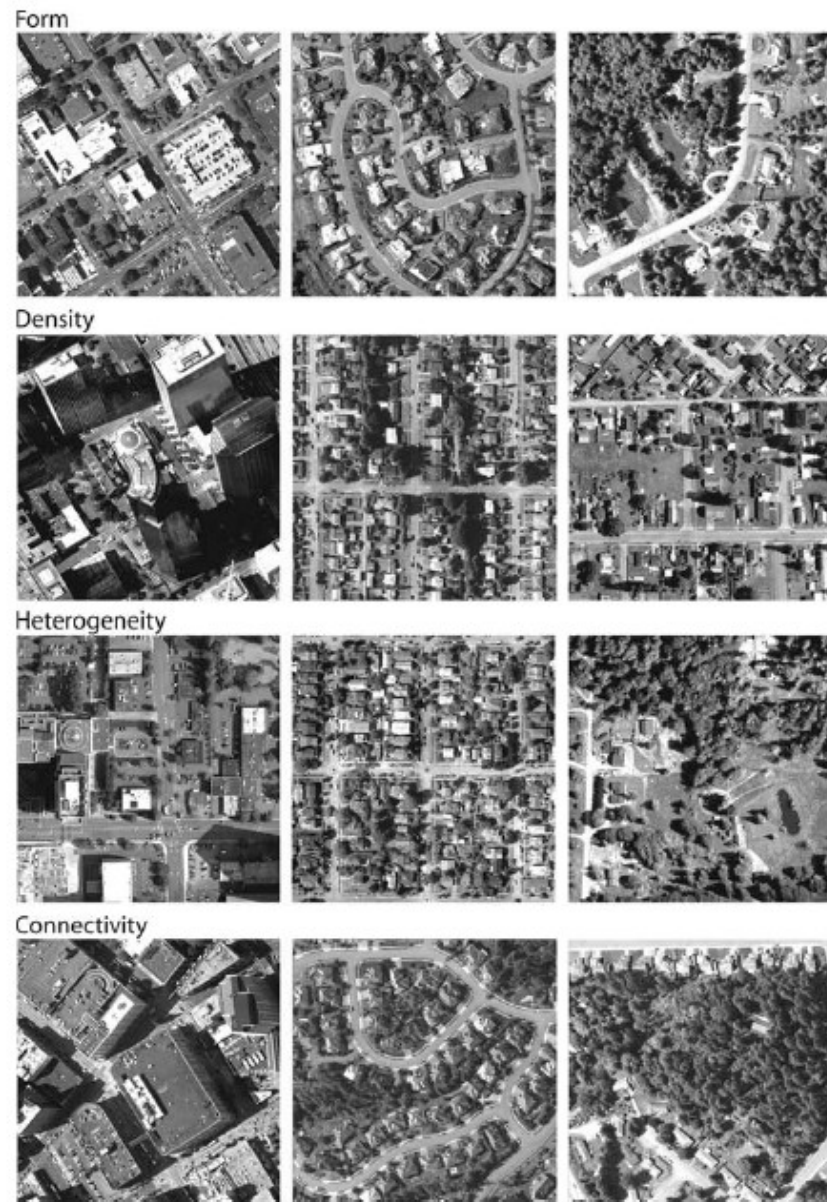


Figure 4.3. Four dimensions of urban landscape pattern.

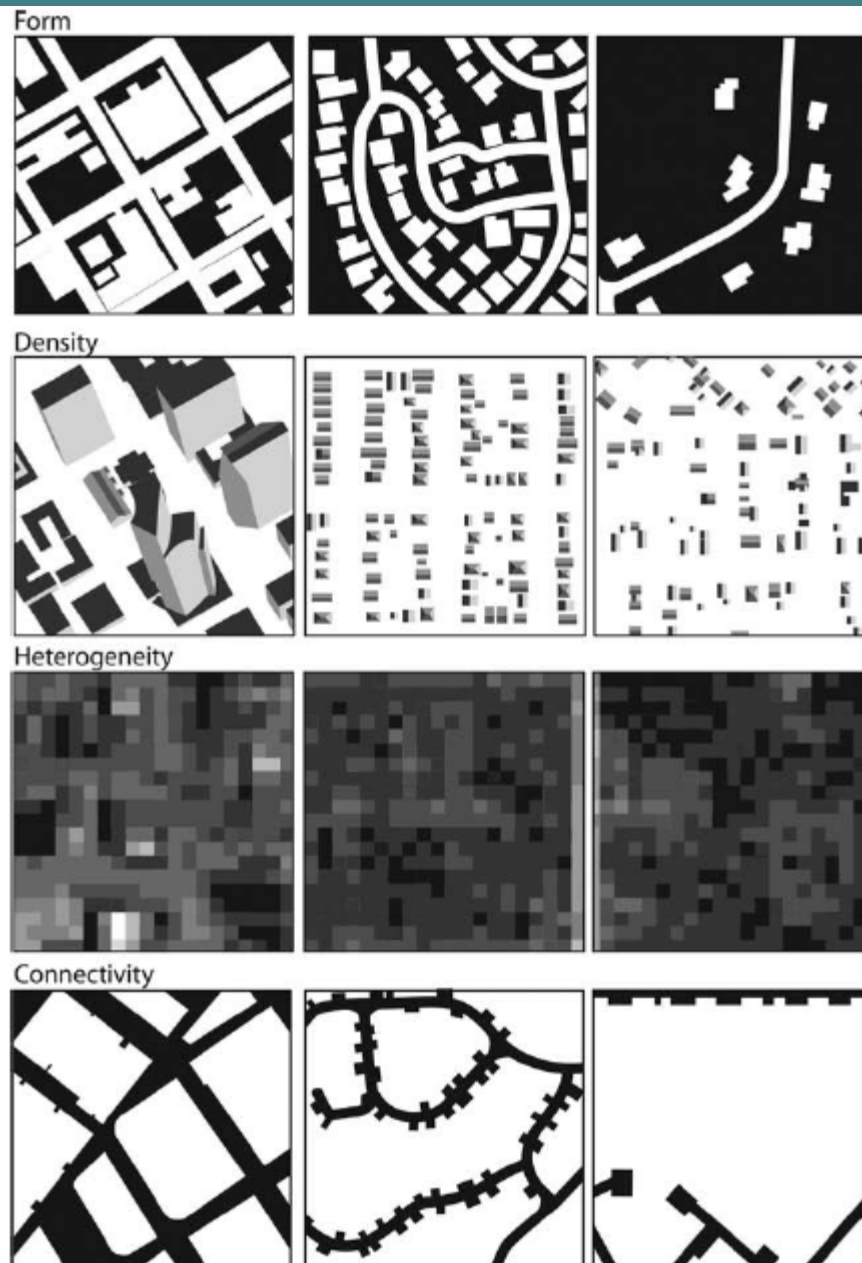


Figure 4.3. (Continued).

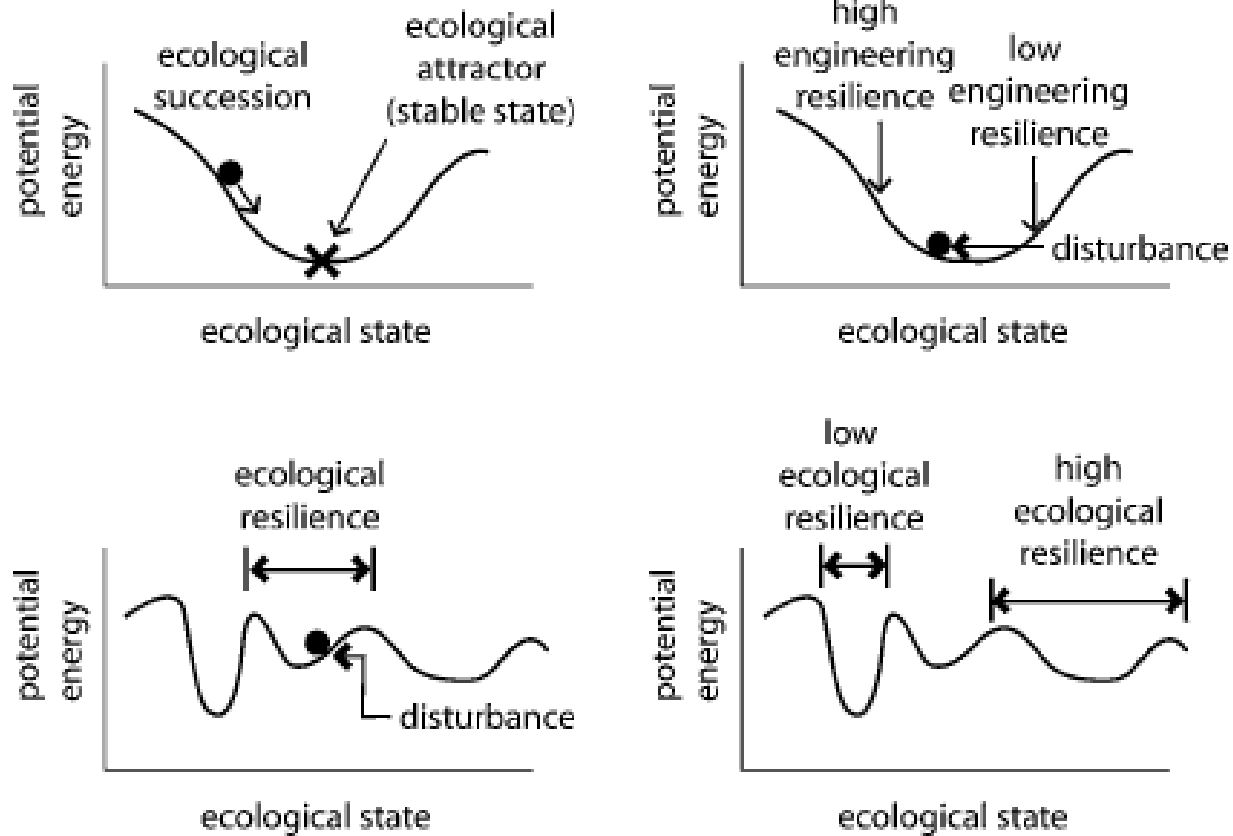


Figure 9.1. Ecological resilience. The four diagrams describe the difference between ecological and engineering resilience according to Holling (1973). Engineering resilience is the rate at which a system returns to a single steady state following a perturbation. In the diagrams, the steepness of the sides of a stability pit. The deeper a pit the more stable it is. Ecological resilience is a measure of the amount of change that is required to transform a system from being maintained by one set of mutually reinforcing processes and structures to a different set of processes and structures. Ecological resilience is a measure of the regional topography of a stability landscape. In the diagram, ecological resilience of a system corresponds to the width of its stability pit. (Peterson 2004).



Figure 7.1. The atmospheric cycle in the urban landscape (Background photo: © Aerolist-photo.com).