
Subject 1. Observation Point 1

In the area marked with letter A (Source A) there is a brownfied (*Brownfield land is a term used in urban planning to describe any previously developed land that is not currently in use, whether contaminated or not or, more specifically to describe land previously used for industrial or commercial purposes with known or suspected pollution including soil contamination due to hazardous waste).*

Knowing the following:
1. Iasi has a population of 350.00 inhabitants (500.000 with the metropolitan area)
2. The surrounding area (buffer zone of 600 m there are 70.000 inhabitants)
3. The districts in the South, South East and South West have a low accessibility to many facilities (no green areas, no supermarkets, no hospitals, no office centers)
4. The delineated area has a surface of 30 ha.
5. There are plans in the ***future for the city*** *to build a sports centre, a regional hospital, a village livable museum, a multimodal transportation centre).*
The area delineated in the Source A which is located in the directions S-E from the UAIC tower is located near the main train station.

a. **Explain the process of industrial relocation in the past 30 years using the following keywords (accessibility, sustainability, pollution, land value) (1 point).**

Nowadays, the change from heavy industry to light, footloose industry, has meant that industries can locate anywhere and so other factors, such as communications links and government policy, become far more important.

Location factors are easily divided into two sections: *Physical factors and socio-economic (human) factors.*

A general rule is that the physical factors were the primary influence over the location of the old industries in Britain,whilst the economic ones are increasingly important in industrial location now.

Physical factors

Accessibility: *The site of the new factor needs to be accessible, so that importing of raw materials and exporting of finished products is easy.*

Early industry had to have good access to raw materials, usually though natural routes like rivers. Nowadays access is needed to transport routes.

Climate: *The climate could affect where an industry locates, as it needs to attract workers to the area. This is not a particularly important factor.*

Land: *The site of an industry is very important. Usually, flat land is the most essential thing to find. Most industries alsotry to find areas where there is room to expand once production has become successful.*

Victorian industries often located in the inner city areas of towns, which didn't allow much room for expansion, but was required because the work-force could live within walking distance of the factory.

Today cars have allowed industry to move to out-of-town locations as the workers can drive to the factory.

Power: *Initially, industry had to locate right beside its power source. Water power was used at first, and then the burning of coal produced steam power. Both sources of energy restricted where industries could locate, as they had to be beside a suitable river or near the coal field.*

ow, industries can gain their power from the National Grid and so power does not really influence location a great deal.

Raw Materials: *Old, heavy industry required large amounts of bulky raw materials, which were very costly to transport, and so the industry located close to them. Newer industries are described as being* ***footloose****, as they are not tied by being near raw materials, which are smaller and easier to transport.*

Socio-economic factors

Capital: *Very important to any industry. Companies cannot set up their chosen industry without investment of money. This may come from private sources or from the government.*

Communications: *Probably the most important factor for new industries nowadays. Most need communications links not only to the rest of the country, but to the rest of Europe and the World. Transport routes such as the motorways, airports, railways and the ports are all things that will attract industrial location.*

Communications increasingly also includes access to the internet, fax and phones. All these allow industries to have a greater freedom of choice over their location.

Government policy: *Governments can greatly influence the location of industry, by giving tax incentives, cheap rent and other benefits to companies locating in certain areas of the country. Often these are places, which the government wants to develop economically. Government policy also lead to the closure of many of the heavy industries in the United Kingdom, such as numerous coal mines and ship building yards.*

Labour Supply: *Very important to old, labour-intensive industries. This is why many of them located in the inner cities, so that there was a huge pool of potential workers close by. With the growth in car ownership, and industries becoming more mechanised labour supply is not such an important factor for most industries. However, some industries rely on it.*

b. **Propose a plan to rehabilitate the area using all the information provided. Try to offer arguments using the nowadays associated risks, the plan you propose and the overall importance to the city. (3 points)**

Subject 2. Observation Point 2

The increase in the Neolithic human population following a development of agriculture has been assumed to result from improvements in health and nutrition.
Knowing this, observing the style of living during the Neolithic period (Cucuteni Museum) and looking on the map below (source B), please answer to the following:

a. How did the demographics of the population change from Paleolithic to the Neolithic. (1 point)

After the members of the genus Homo *had been living as foragers for at least 2.4 million years, agriculture began to emerge in seven or eight regions across the world, almost simultaneously at the beginning of the Holocene: in the Levant, in North and South China, in New Guinea and Ethiopia, and in eastern North America, Mesoamerica, and South America, all during the chronological window from 11,500 to 3500 years ago (1). In world archaeological sequences, the emergence of agriculture coincides with a considerable increase in artefact remains, which was long interpreted as indicating a spurt in demographic growth. The world's population on the eve of the emergence of agriculture is estimated to have been around 6 million (2) individuals as against almost 7 billion today, multiplying by 1200 in just 11,000 years. The shift from forager to producer societies is known as The Neolithic Revolution (3). The major change that arose from this "revolution" was, in evolutionary time, the number of potential mouths it was possible to feed per km^2, i.e., the weight of the population, 0.05 people per km^2 with the foraging system as against 54 today and, perhaps, 70 to 80 by 2050. The archaeological data, such as the increasing density of settlement sites during the transition, are too imprecise to express the demographic shift. Cemetery data provide a more direct reflection of demographic processes, and it is from cemeteries that the signal of a major demographic shift can be observed in world archaeological sequences in the Northern Hemisphere (Fig. 1). This signal is characterized by a relatively abrupt increase in the proportion of 5- to 19-year-old juveniles in cemeteries during the economic transition from foraging to farming. This proportion (called $_{15}p_5$ in demographic notation) leveled off 1000 years after the advent of the farming system locally (dt = 1000 years). This expresses an increase in the input into the age pyramids of the corresponding living populations (4, 5),with an estimated increase in total fertility rate of two births per woman.*

What, in the agricultural economy, had an impact on human biology that ultimately determined the growth of the population? The increase in natural maternal fertility, through a reduction in the birth interval, is mainly determined by the energy balance and the relative metabolic load (6). It implies a positive return of the postpartum energy balance, which occurred earlier in farming than in foraging societies due to the energy gain from the high-calorie food of sedentary farmers (wheat, lentils, peas, maize, rice, and millet) compared to the low-calorie food of mobile foragers (mainly game), coupled with a decrease in the energy expenditure of carrying infants. This signal is interpreted as the signature of a major demographic shift in human history and is known as the Neolithic Demographic Transition (NDT) (7) or, synonymously, the Agricultural Demographic Transition. These demographic shifts can be seen in the west of southwestern Asia (8), mainland Southern Asia, Europe and North Africa, and the north and southwest of North America (9, 10).

The NDT is detectable from a signal representing a shift toward higher fertility values, but the mortality part of the signal is missing and must be inferred. The universal density-dependent (also called Malthusian, or homeostatic) demographic model is used here. Unless we assume a demographic growth rate that would rapidly reach a cosmic number, the most likely scenario is that an increase in the birth rate was closely followed in time by an increase in mortality, producing the

historical growth rate typical of pre-industrial farming populations (0.2 to 0.1% per year), with their high birth and mortality rates.

What might have been the causes of the increased mortality rate? Old and new pathogens would have contributed. With the appearance of sedentary village life and the corresponding growth in local population density, mortality rates inherited from the foragers rose rapidly, particularly in children under 5 years of age. Causes of increased infant mortality include a lack of clean drinking water, contamination by feces and the absence of latrines, and reduced breastfeeding as maternal fertility increased. Candidate infectious diseases, by epidemiological inference from current pre-industrialized areas, include those associated with diarrhea (Rotavirus and Coronavirus) as the main killers of children under 5 years of age. Zoonoses could have had an impact on the population with the introduction of animal domestication, whether at the same time as plant domestication [pigs, water buffalo, and probably chickens in China; guinea pigs, llamas, and alpacas (11) in the Andean highlands] or later [goats, sheep, and subsequently cattle and pigs in the Levant (12)].

When compared with the Contemporary Demographic Transition (CDT) as described for Western industrialized societies, the NDT was its mirror image. In the CDT, the decline in mortality was followed by a decline in fertility, but in the NDT, increased fertility was followed by increased mortality. The CDT is slowing the growth of the world population, but the NDT was its springboard. In both cases, however, the time lag between the two stages produced an interval in which fertility exceeded mortality and resulted in a rapid increase in the population. As demographic density increased appreciably in the centers of these zones, the NDT triggered a major geographical redistribution of the population, with colonization or invasion by early farmers with their technologies, lifestyles, and languages that in some cases reached the continental scale, supporting what Renfrew and Bellwood have called "the farming/language dispersal hypothesis" (13). Simultaneously, the NDT was accompanied by increasing social stratification and complexity, the advent of market economies, and the ensuing emergence of states.

The demographic limit at which a hamlet becomes a village can be defined by the cognitive limit of integration by the human brain of numbers of interpersonal relationships, i.e., 150 people (14). Although villages were established by sedentary foragers, in geographically fixed zones with dense food resources (wild grasses, shellfish, freshwater fish, various nuts) in several points on the planet and in the same chronological window as the NDT, these forager villages were marginal exceptions. Their economic system was constrained by the limits of nature, which left little margin for demographic growth. World archaeological sequences show that the first sedentary villagers emerged in large numbers from the NDT. They were faced with entirely new social, economic, and ecological challenges. NDT villagers are discussed in the volume edited by Bandy and Fox (15). In comparison with nearly 2.5 million years of a forager culture, the NDT, in just a few hundred years, or two or three millennia at most, caused humans to domesticate themselves in villages. In these primitive village societies of farmers, say these two authors, life was improvised, provisional, and innovative. Do these early villages represent evolutionary responses from the first human farmers to a set of new, recurrent, and comparable socioecological conditions? If so, what were the major factors that shaped developments of these early villages? With the demographic concentration emerged political institutions, from village to proto-city, from big man to chiefdom. In world archaeological sequences, what are the similarities and dissimilarities with the tempo of demographic concentration (16)? At the peak of the NDT, there were children everywhere and the average age of the population was about 18 years old. What evidence or impacts of this exceptionally youthful population can be recognized in the patterns of cultural production of the first agricultural societies, from ceramics to statuary and images?

Theoretically, the NDT was accompanied by the first epidemiological transition (17). Coronavirus and Rotavirus are hypervariables, and their taxa are not specifically dated (18, 19). Among extant taxa, do

*those endemic to prehistoric foragers and responsible for childhood diarrhea in the NDT still exist? The phylogenetic analyses of three important present-day infectious diseases either do not coincide with the timing of the NDT [measles: 1100 CE (20); severe form of smallpox: 350 to 1550 CE (21)] or suggest a zoonosis scenario, which is the reverse of what is intuitively expected: Tuberculosis (*Mycobacterium tuberculosis *complex) was transmitted by humans to bovines during their domestication in Mesopotamia 10,000 years ago (22). These epidemiological results are mixed and require closer investigation. The NDT implies Renfrew and Bellwood's farming/language dispersal hypothesis and Ammerman and Cavalli-Sforza's model of demic expansion (23). In molecular skeleton data, one must thus expect a phylogeny of pioneer farmers derived from populations of ancestral source regions of expansion, as shown, for example, by Haak* et al. *(24) on the expansion of pioneer Linearbandkeramik (LBK) farmers in central and northern Europe. But what emerges for other regions of agricultural invention? Because of the unprecedented demographic masses it rapidly brought into play, the NDT, which is now ending with the CDT and the collapse in fertility, is one of the fundamental structural processes of human history; its multidimensional consequences are just beginning to be explored in terms of sociopolitics and ideology, epidemiology, and population genetics.*

b. Indicate three regions with the maximum density of population and present two common characteristics of the environment. (1 point)

Caracteristici – soluri fertile, surse de apa, izvoare minerale, situri favorabile apărării (orientul mijlociu, Centrul Chinei, Europa de Sud-Est, Valea Nilului, regiunea Andină a Americii de Sud.

c. Explain how the Cucuteni civilization influenced the close environment. (What was their ecological footprint? How did they affect the natural environment?) (3 points)

With the development of agriculture, humans began to radically transform the environments in which they lived. A growing portion of humans became sedentary cultivators who cleared the lands around their settlements and controlled the plants that grew and the animals that grazed on them. The greater presence of humans was also apparent in the steadily growing size and numbers of settlements. These were found both in areas that they had long inhabited and in new regions that farming allowed them to settle. This great increase in the number of sedentary farmers is primarily responsible for the leap in human population during the Neolithic transition. For tens of thousands of years before agriculture was developed, the total number of humans had fluctuated between an estimated five and eight million persons. By 4000 B.C., after four or five millennia of farming, their number had risen to 60 or 70 million. Hunting-and-gathering bands managed to subsist in the zones between cultivated areas and continued to war and trade with sedentary peoples. But villages and cultivated fields became the dominant features of human habitation over much of the globe.

The Transformation Of Material Life

The growth of sedentary farming communities in the Neolithic era greatly accelerated the pace of technological and social change. The relatively sudden surge in invention and social complexity in the Neolithic era marks one of the great turning points in human history. Increased reliance on sedentary cultivation led to the development of a wide variety of agricultural

implements, from digging sticks used to break up the soil and axes to clear forested areas to the introduction of the plow. Techniques of seed selection, planting, fertilization, and weeding improved steadily. By the end of the Neolithic period, human societies in a number of areas had devised ways of storing rainwater and rechanneling river water to irrigate plants. The reservoirs and canals, dikes and sluices that permitted water storage and control represented another major advance in the ability of humans to remake their environment. These changes protected the thin and fragile soils of the tropical or semitropical areas from the sun and torrential rains.

More and better tools and permanent settlements gave rise to larger, more elaborate, and commodious housing and the construction of community ritual centers. Building materials varied greatly by region, but sun-dried bricks, wattle (interwoven branches, usually plastered with mud), and stone structures were associated with early agricultural communities. Seasonal harvests made improved techniques of food storage essential. At first, baskets and leather containers were employed, but by the early Neolithic period pottery, which protected stored foods better from moisture and dust, was known to a number of cultures in the Middle East.

Houses in early agricultural settlements usually included special storage areas, and most were centered on clay or stone hearths that were ventilated by a hole in the roof. The presence of stored food in early villages made the houses tempting targets for nomadic bands or rival settlements. For that reason they were increasingly fortified. More dependable and varied food supplies, walls, and sturdy houses greatly enhanced the security and comfort of human groups. These conditions spurred higher rates of procreation and lowered mortality rates, at least in times when crop yields were high.

By the end of the Neolithic period in the 6th millennium B.C., many of the major food plants that humans cultivate today had been domesticated. In addition to food crops, plants, such as flax and cotton whose fibers could be woven into clothing, tents, and rugs, had begun to be cultivated in the Middle East and other areas. New tools and ready supplies of hides also led to new forms of water transport. Axes made possible the carving of paddles and dug-out canoes capable of crossing large bodies of water. Skin-covered boats and reed-and-log rafts were also surprisingly effective forms of water transport. Even after the introduction of the wheel in Afroasia in the 4th millennium B.C., water transport remained much more efficient than land, particularly when bulk goods were involved. Not until railways revolutionized land transport in the 19th century A.D. was this situation reverse

Subject 3. Observation Point 3

In the past, fieldwork observation point number 3 (the Botanical Garden) had three other locations (B, C, D) as marked on Source 1. Study the provided map and answer the following questions.

3a. Identify 2 possible causes for the changing of the location of the Botanical Garden from point C to point D. (2 points)

The need for more space, in order to satisfy the ever-greater need of a continuously larger number of young students to have a place, to study and relax.

Inappropriate funding strategies, which have failed, several times, implied the need to relocate the Botanical Garden.

Repurposing the area into a park, and several buildings, serving administrative purposes for the University, as well as a canteen.

Expanding of the limits of the city

3b. Argument on the location that you considered to be the best among the four alternatives. (2 points)

Location D, because:
- It has a larger space, to accomodate numerous plant sections.
- There is place to expand, on the edge of the Botanical Garden, if required
- It is located at the perifery of the city, therefore being less polluted
- It is already located in a neighbourhood with numerous green spaces, blending in the scenery, a lot more efficient
- It is located in an area affected by landslides (so the construction of residential buildings (or other types of buildings) would not be a risk-free idea

Location C, because
- It is very close to the university, forming a local “nucleus of scientific interest”, on a very compact area
- It is easily accesible
- The continuity of green, recreational areas, in Copou neighbourhood, would be kept at a maximum, considering the other large parks in the area

Location A, B, because:
- they are easily accesible
- they are located in the city center, favouring a larger number of visitors, therefore, a higher income derived from entrance taxes

3c. **In terms of infrastructural development and social-communal activities elaborate 2 strategic directions for the betterment of the lake in the Botanical Garden. (4 points)**

Infrastructural development strategic direction:

- reconditioning of the road infrastructure, and making it more pedestrian-friendly
- reconditioning the long stairs from the entrance, to the lake, and introducing several levels, where people can have a break from going up/down the stairs (thematic recreational places)
- introducing more "urban furniture" that would blend in seamlessly with the environment, and have functional role, as well (trash cans, directional signs, thematic benches etc)

Social-communal activities strategic direction:

- generating more partnerships with local administrative institutions
- awareness campaigns for local and foreign visitors
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Subject 4.

All three observation points are fully managed by the University "Alexandru Ioan Cuza" of Iași. The University was founded in 1860 and it is the first institution of its kind in Romania, being the third largest with more than 30.000 thousand students.

4a. Write a one sentence "vision statement" for a more attractive and dynamic University, taking into account the historical and cultural heritage of the institution and of the city. (1 point)

University of Iasi – inspired by illuminated students

Our research, education and cooperation shall be characterised by a quest for high quality; our standpoints and decisions shall be based on a clear responsibility for the development of society; our work shall be guided by a global engagement that constantly reminds us of our role in the world; and an inspiring work environment is an important prerequisite.

To create a transformative educational experience for students focused on deep disciplinary knowledge; problem solving; leadership, communication, and interpersonal skills; and personal health and well-being.

To cultivate a transformative university community committed to (a) attracting and retaining diverse, world-class talent; (b) creating a collaborative environment open to the free exchange of ideas, where research, creativity, innovation, and entrepreneurship can flourish; and (c) ensuring individuals can achieve their full potential.

To impact society in a transformative way — regionally, nationally, and globally — by engaging with partners outside the traditional borders of the university campus.

A vibrant learning environment – fostering innovation and creativity, informed by practice, inspired by research, focusing on the globally relevant areas in which we excel.

We are building the next generation of highly employable global citizens to shape the future.

4b. Elaborate 3 strategic directions which aim to attract more students to the University and that are directly linked to the vision statement you proposed. The campus facilities and the social life of students should not be ignored. (3 points)
