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Sub-Committee for Information and Training

International Study Conference on the role of Regional Ethnology in Environmental Interpretation and Education

The Role of the Historical-Archaeological Research Centre in Lejre

by
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FOREWORD

The Historical-Archaeological Research Centre at Lejre, Denmark was created in 1964. During the last ten years it has undergone considerable growth and established a name for itself both before the Danish public and in national and international scientific spheres. After this ten year period of expansion the committee deems it advisable to pause and evaluate the experiences and on these evaluations base the best plan of continuance for the Centre. The results of these considerations, including the plans for the next five years, are disclosed in the following pages.

In the first ten years of the Centre's life it quite naturally suffered a variety of childhood diseases, among them the growing pains symptomatic of a stressed economy. While the ailments were remedied, it should not be concealed that the financial difficulties took their toll, demanding a disproportionate amount of time and energy.

Now that the value of the Centre and its significance to modern society has been well settled, it deserves a financial basis which will enable all its energy and work forces to be concentrated on realising the goals of the Centre.

(Official foreword to the complete version of the Danish edition of the Centre's perspective plan, Perspektivplan 1976-1981)

RESUME OF THE PERSPECTIVE PLAN

Goal:

The Historical-Archaeological Research Centre has undergone development which necessitates a more explicit formulation of its goal. The goal of the Centre in the future will be, among other things, to create background information with which the public can form attitudes on important current issues such as housing, landscape, and man's environment in the broad sense. This should be advanced from the base of pre-industrial workmanship, technology and milieus in our own and foreign cultures.

Working fields:

Since the founding of the Centre in 1964, four principle fields of work have been developed which in order of their priority are:

- Research and development
- Information for the schools
- Work for the tourists
- Adult courses

It is financially advantageous that these programmes are assembled under one administration since a division into several sectors would be far more expensive to operate. However, it is the effectiveness of this method of work that has boosted the total costs of development from 1973 to 1976. The normal budget has risen from one billion Danish kroner to two billion Danish kroner.

The value ascribed to the Centre's continuance is documented by Danish and international documents and applications (several of which appear in the appendix of this plan). The Centre's research and development is devoted to projects of particular interest for orientation on current problems.

The Centre uses among other mediums, workshops created to gain insight into daily life of developing countries. For example, one is a recreated African Tonga village, another is devoted to the environmental interpretation of Danish landscape: its settlements and buildings and man's present use of landscape.

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The running of a camp-school project for the study of pre-mechanised farming is made better by drawing on past experiences with the existing camp-school facilities of the Centre. Moreover, the Centre explores and solves a long list of other problems related to practical subjects and activities through reconstructed frameworks of our ancestor's existence and continuing up to modern times.

Economy:

Since the beginning, the Centre has every year applied for and received public grants to cover part of the costs of running the Centre. The distribution of finances has been as follows:

- The Ministry of Education, per year, 300,000 Danish kroner for research and development on a national level beginning in 1969/70.

- The Council of the metropolitan region of Copenhagen, 225,000 Danish kroner to ensure the tourist season and the county councils of West Zealand and Storstrom counties 50,000 Danish kroner to ensure administration and development (1974/75).

Also an agreement concerning a common school service for a number of museums in the metropolitan region has been activated.

The expenses connected with educational information for the schools will be taken over by the common school service in the future.

In addition to various grants for special constructions and maintenance the Centre has earned a considerable sum, which in 1975/76 is expected to reach 800,000 Danish kroner (total profit before expenses are paid, coming from educational fees, sale of visitor's passes and sale of historic copies). The Centre is exempt from income taxes since it is a non-profit, self-owning organisation.

Although net income can not be transferred to special projects or research, it has fundamental influence over the Centre's informative activities.

Finally, the Centre has paid out large amounts for the establishment of its permanent arrangements (pr. 31/3 1975 the cost was 941,500 Danish kroner). The public grants have through time covered part of these expenses, while other

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parts have been covered by loans (pr. 31/3 1975 total: 334,000 Danish kroner) and cash credits (pr. 1/11 1976 total: 400,000 Danish kroner). The interest and instalments of these loans and cash credits obtained by the Centre, have over years of uncertainty, caused the institution severe problems. However, the permanent arrangements are absolutely necessary for the general activities and for completing the tasks of the Centre satisfactorily.

Plan for the coming five years:

In 1976-77 the authorities have ordered considerable improvements to be made in the areas of sanitation and fire safety. If not fulfilled, the Centre's tourist and school activities will be stopped. The Centre therefore must ensure that these changes are brought about.

Since 1969-70 the Centre's research and development activities have not been properly renewed and extended. The Centre intends to ask for public grants to help solve this problem and once again create a useful research milieu, which can cope with the demands of professional standards. To solve the short term loans and cash credit problems which have arisen, the Centre intends to ask for government loans of a more long term nature.

1977-78: The Centre will consider a useful facility for overnight stays by study groups and the construction thereof. Also the production and printing of better course material for the many students and primary and secondary school instructors teaching such subjects as biology, history, geography, contemporary orientation, art, carpentry, and home economics, will be considered.

1978-79: A report of the final results obtained from the work with the African Tonga village is planned as a foundation for an eventual permanent open air site from 1979-1980 (at the Centre or outside). The Centre will try this year to organise a camp school facility outside the institution in one of the properties bought by the Minister of Environment. The camp-school will concentrate on the pre-mechanised society of farming and fishing (c. 1800-1900), with eventual supplements on the living environment and subsistence economy of an older society, ie the Iron Age.

The present camp school inside the Centre will be given up. Possibilities of two new offerings of work excursions (for the primary and secondary schools) will be created representing two other time periods which are closely bound up in the understanding of cultural ecology of Denmark's past:

1. the Mesolithic Stone Age and

2. the farming society of the 19th century in Denmark.

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1979-80: The first phase of moving the African Tonga village should be completed. The new setting up of this and other examples is due to reasonably satisfactory results from the trial period. This year the experiments concerning various aspects of environmental interpretation nature trails, visitor's centres (and nature park centres), landscape readings and popular explanations of traces of the past to the present milieu will cease.

The Centre intends to publish the results as a pilot project for similar arrangements in Denmark and abroad for the promotion of the planning of conservation of monuments and nature and the legislation behind conservation.

1980-81: The Centre intends to restore a number of worn down facilities that have been used as part of the general visitor's programmes, and the planning of the further experiments to be performed by the Centre during the next five year period will be initiated.

Other programmes planned are:

A Norseman's farm (Greenland c. 1100 AD)

A Medieval village (Zealand c. 1100-1300 AD)

A living farm (Denmark c. 1800-1850 AD)

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Structure plan 1976
Historical-Archaeological Research Centre, Lejre

Description of the structure and building-up of the Centre based on its "Perspective Plan 1976-1981"

THE CENTRE

1. The Centre's administration and economy is divided into six units each of which has the possibility of deciding, distributing, and taking responsibility for:

- the available sum of money per year
- the work to be done through the year
- rooms (houses), materials, and equipment.

2. The common joining links are:

- the committee
- the administration
- the department meeting held by the director
- the services to the users of the Centre.

3. The goal of the Centre is the overall aim at unity as described in the "Perspective Plan 1976-1981".

4. The departments are free to ask for grants supplying the financial support to the Centre.

5. The committee employs a responsible director who speaks for the Centre, keeps contact between the departments and takes the overall responsibility for the dispositions if the leader of the department wants it. The director shall, to the degree the financial situation allows it, carry through the "Perspective Plan".

THE MONEY AT THE COMMITTEE'S DISPOSAL

The committee sets aside a sum of money every year that can be used on tasks which were unforeseen, or which are considered important enough to pursue. The distribution is to be decided according to proposals from the departments of the Centre. The proposals shall be given to the responsible director of the Centre and the final decision is made by the committee. Through the secretary and book-keeper the board of directors receives the necessary reports and resumés.

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THE ADMINISTRATION

The administration consists of a book-keeper and a secretary both employed on a part time basis. Some of the tasks can be performed outside the Centre, eg typing and financial consultation.

The task is:

- to be a channel for all addresses coming from outside the Centre
- to be responsible for the accounts, information concerning the budget, the payments and financial data for use outside the Centre as well as inside
- to be secretary to the director of the Centre and the Centre's departments as well as to the committee
- to execute a number of routine tasks which are better centralised than distributed among the departments.

The office is located in the western room of the "Videsøhus".

THE FARMING DEPARTMENT

The Centre's land and the leased or borrowed land and buildings outside the Centre is cultivated and used for farming purposes. Houses, stables and barns, sheds, hedges, fences, tracks and roads, places and gates, and the necessary machines, vehicles, and equipment are under the auspices of the farming department, whose task it is to ensure that parts of landscapes of cultural interest, old species of domestic and wild animals with ecological affinity to man's society, and historical plant life is kept and used. Under this comes also the planting and regulation of forest, hedgerows and scrubs and the preservation of all common areas not under any other department's use or responsibility. The maintenance of the Centre's workshops and administrative buildings is also the responsibility of the farming department. The supplying of raw materials and transportation to the place of use is done by the farming department. A certain amount of income is to be ensured. The dividing line between areas and buildings under and outside the responsibility of the farming department is settled by agreement.

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RESEARCH AND DEVELOPMENT

The basic responsibility is outlined as such:

- a research milieu under co-operation with a number of departments and with experts and consultants from outside the Centre
- education of the staff running the departments
- education directed toward outside persons or groups

The research and teaching is in co-operation with all departments in order to create a consultative and inspiring basis for the Centre.

The evidence, material and documentation on research is filed in the archives and library. Co-operation and meetings with the general public will be conducted from a factual point of view. Experiments, the necessary equipment and space is all the departments concern. It is unsettled where the final housing will be located, whether it will be located outside the Centre or in eventually vacated rooms in the Centre.

THE AUDIO-VISUAL WORKSHOP

Books, pictures and sound are gathered, filed, worked through and published for:

- orientation of the public
- material for the schools
- courses and adult education programmes
- international use
- other institutions

The workshop is developing much material but not for the specific purpose of large scale production. If at some time it is beneficial for the Centre, the workshop may produce from its collection. The workshop's equipment (film, files etc) is under the auspices of the Centre whether in circulation outside the Centre or in permanent use at the Centre. The workshop is located in "House A" at the Centre.

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THE EXPERIMENT WITH PRE-INDUSTRIAL FARMING AND FISHING FOR CAMP SCHOOLS

This experiment deals with a new concept of camp schools based partly on actual use of boats for sailing and fishing and partly on intensive use of land-resources. The experiment is solely aimed at camp school activities lasting for 3-5 days. A base house for the school services is used.

THE AFRICAN TONGA VILLAGE

Another experiment based on the ethnographic workshop is the African village. During a number of years here, the possibilities of a permanent site have been realised, the purpose of which could be primarily education or also include activity for the general public. The experiment includes gathering material in Africa and a number of tasks outside the Centre connected with orientation and consultation with experts. The experiment is localised during the research period to a base house and an open-air site.

THE WEAVING WORKSHOP

The history of textiles and the technology behind their creation as seen through the background of various cultural and geographic regions of the world is studied.

The aim is to reproduce and/or revive working techniques. The work includes:

- weaving techniques
- spinning, braiding and the treatment of materials
- the study of garments and articles of clothing - their use and appearance.

The materials treated range from wool, silk, linen etc to skin, leather, fibres and bark. As with the other workshops and milieus involving employed personnel, the work is performed to attain certain goals:

- research and new knowledge obtained (the workshop is part of the Centre's research milieu)
- information and education of the key people who can carry on further instructional work
- information and education of the Centre's staff in general

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- information to visiting experts
- production of copies and exhibitions for the Centre, museums or other institutions
- advice if copies for the Centre's shop are done outside the Centre

The activity of the workshop is directed at institutions both in and out of Denmark.

The weaving workshop is located in "Høstenhus".

The work should be of high quality.

THE WORKSHOP OF CLAY AND FIRE TECHNIQUES

This history of the use and shaping of clay and the various working techniques involved with the use of kilns and "milers" for firing pottery in different parts of the world is studied. Also, kilns, fireplaces and firepits for other purposes are grouped around this workshop. The research work is done in close connection with the metal workshop. The workshop shall contribute to a great extent, the products for the shops and the reconstructed copies for the Centre's milieu.

The workshop deals with:

- pottery
- tiles and bricks
- the treatment of raw materials

(see description of the weaving workshop)

The workshop is located in "Nørrehus" at the "Braendingspladsen".

THE METAL WORKSHOP

The history of forging, iron extraction and metal-work from the various parts of the world is studied. Primitive iron extraction, forging and casing of metals such as copper and bronze is centred around later traditions of metal work. Also, silver and gold-smith techniques could be taken up (they are not currently being studied). (See the Weaving Workshop). The workshop presently occupies the room in "Smedjen" ("the forge"), where the space is limited. The workshop has great opportunities to make copies for the Centre's shop and milieus.

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THE SMALLHOLDER'S HOUSE (Landbohuset)

This is a reconstructed working milieu created as a smallholder's home c. 1800-1900 AD. Besides the living-room, scullery, chimney, stable, barn, shed and garden there is also a three acre land allotment incorporated in the functioning of this place. The materials - from furniture, plant growing and animal husbandry, come from original museum pieces and partly from copies. However, it is intended that copies be used to a greater extent. This milieu is as far as possible, run without the use of present day tools and close to general principles of ethnology. The goal is to show the context within the history and social life of the time and to perform the activities as:

- part of the studies of traditions handed down from the 19th century
- part of the education and course offerings of the school services
- part of the tourist service

The 19th centruy smallholder's house is also called "Hørhavehuset".

THE PREHISTORIC VILLAGE

A reconstructed, working milieu from 500 BC - 400 AD (in Denmark: the "Older Iron-Age" or Celtic and Roman Iron-Age).

The milieu is worked out as a small village with various house types under continuous archaeological revision. A natural terrain of approx. 3-4 acres is taken into use for recreation of agricultural techniques thought most probable. Besides, the Centre's 20 acre nature terrain towards the north-east is used to illustrate zones of transition between cultivated soils and natural forests in the Iron-Age. It is intended to place all educational and demonstrational activities, which in time and cultural milieu belong to this age, on this plot, instead of the present arrangement in various workshops and rooms. To a certain extent the frame-work of the imitative experiments is set by the village. The goal of the Prehistoric Village is to create a living milieu where plants, livestock, tools, housing and living environment present our view of prehistory to the public.

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THE BUILDING TEAM

There will be continuous building out of the milieus of the Centre for research purposes and to ensure proper information and education. Larger constructions or more thorough restorations are best done by specific grants and with specific work-groups. In connection with the work of the building team, experiments and training involving knowledge about wood materials and tools for the shaping of wood are performed. The building team makes arrangements for the delivery of building materials. In co-operation with the research department, or with consultants from outside the Centre, drawings and work descriptions are made. If the Centre's economy and growth makes it especially necessary to draw upon the help of the building team, modern construction could be done.

THE SCHOOL SERVICE

The service is established in a general agreement with other museums in the metropolitan regions of Zealand. The school service performs services and experimental development in the fields of education.

The service works on several levels:

- the visiting schools
- the activities for excursions
- camp schools
- other types of curricula or study group work at the Centre

The staff consists of two experienced teachers employed as educational officers by the School Director of Copenhagen, but who work according to the Centre's aims and structure. Six part-time instructors and a part-time secretary are also employed. Where it is felt necessary, the school service takes part in consultative work and draws up budgets, schemes, and material for the schools. Besides the general service there are a number of tasks which must be paid for partly by the running finances of the Centre and partly by specific grants. In some cases the school service has income from the courses. The school service controls a base house, the camp school facilities, and a number of milieus.

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THE TOURIST SERVICE

The yearly season with the living presentation of the results of the Centre's research and developmental work, and the reconstructed milieus is ensured by:

- agreements with the departments
- announcements and programmes to the public
- publishing of the needed brochures and guides with explanations translated into several languages and the printing of posters
- receptions for special guests and visiting groups
- the sale of tickets and guides
- the contact to the tourist council (of Denmark) and other tourist organisations
- statements and statistics of the visitors' fees (to the owner of the grounds, Ledreborg Estate)
- the employment of the seasonal staff, the opening and closing of sites and places which other departments do not have the responsibility for
- agreements about exhibitions which could just as well be done by other institutions
- the tourist service is a broad service from the Centre to the general public (both in Denmark and from abroad)

This "display window exhibition" presents the Centre's work ensuring a meeting between the visitors and the staff of the Centre.

THE SHOP

The shop sells historic copies, distributes information to the public and dispatches material on the articles sold. The historic copies (and originals on which we speak of ethnology) could be:

- products from the workshops sold at separate price agreements
- products bought outside the Centre and sold at a commission

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The shop also can perform publishing and reproduction of material from the audio-visual workshop and other departments. However, the shop is not a channel for general publications.

Soda, film, stamps, and postcards are available in the shop which is located in the eastern part of the "Videsøhus".

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THE SCHOOL SERVICES OF THE HISTORICAL-ARCHAEOLOGICAL RESEARCH CENTRE AT LEJRE, DENMARK

In 1967 the Centre began to work in co-operation with the Danish Folk Schools. From then on experimental camp schools were held in order to explore a number of educational programmes directly founded on the scientific research performed at the Centre. After three years of trial it was decided that the schools be offered the following possibilities at the Centre:

- camp schools
- work excursions, and
- class visits

From the early 1970's the use of the offerings grew so fast that the capacity had to be stretched to meet the requirements. More prehistoric house reconstructions were built, new rooms for educational use were created, more instructors were employed, but still the demand is far greater than the Centre's department of school services can cope with. Plans are therefore being considered for setting up two more offerings (one offering consists of one school class per day of school service). This is only possible if the economic basis can be created in the coming two years.

THE SCHOOL SERVICES

Most pupils meet cultural history through the subject "Orientation", (a subject in the Danish Folk School system which integrates history, geography, and biology and from 1 August 1976 will be changed to "Contemporary Orientation").

With the aid of a text-book, oral narration and discussions the students are supposed to get insight into a past, or present, but foreign society, all of which the present educational system forces between four walls of a classroom. The Centre has arranged it so that students may have the chance of trying practical work processes which will enable them to experience history (and now also geography) in an alternative way. The Centre has various workshops where work is done to determine how distinct crafts were performed in the past, e.g. the Iron Age, 500 BC - 300 AD in Denmark. Copies of tools are made and tested in different combinations in attempts to disclose the most likely solution to the question of how the tool was used. On another line, but the same time period experiments dealing with the collection and description of work processes and tools from the Gwemba-Tonga society in Zambia are carried out. The results of these experiments are utilised in the three offerings the Centre presents to the schools.

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WORK EXCURSIONS

Two main elements are involved in the educational programmes during a work excursion, namely:

- the experience of the living environment (reconstructed or copied) as the frame of the work and the social relations in the groups. During this the pupils gain an understanding of the relationship between the cultural elements.

- the experience of one's own function in relation to the practical work and the materials as a source of training in concrete working methods and practical knowledge about the origin and use of the tools.

More concisely this means that the students are working with (1) the food and the house and (2) one specific technique.

THE IRON AGE

The pupils come from their home schools and are divided into two groups. One group works for one and a half hours with a given activity eg firing pottery, farming, weaving. After this they exchange work activities with the second group and continue working for another one and a half hours on their new projects. If the class so desires, a previous arrangement can be made so that one group may work on the same activity for three hours.

THE AFRICAN VILLAGE

The pupils are divided into three groups (four if the class exceeds twenty-four children) when they arrive from the home schools. The students work with the same activity eg iron-forging, house-building, and eventually farming, for the whole period but are given the opportunity to follow other groups.

EXAMPLES OF ACTIVITIES ON THE WORK EXCURSIONS

Household activities:

These activities are performed in one of the reconstructed Iron Age houses at the Centre. These houses have been built as they were in that time with the stable for the sheep, goats, and cows in one end and the living room where the majority of the work was done, then as now, in the other end. The houses are furnished with copies of Iron Age vessels and utensils for the students on work excursions to use. Great emphasis is place on what food the pupils can find by themselves

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in the nature around them, such as wild fruits, mushrooms, and herbs. Meat is obtained by modern methods. The cooking involves intensified work which is best done by the class as a whole. The duties are numerous: in the beginning the chopping of firewood and lighting the fire in the fireplace, once started it must be kept under constant watch. Next the grinding of grain deserves much concentrated work best accomplished by co-work. During the whole work process students feel motivated to discuss problems of survival through the winter and the necessity of constant planning of the winter supplies. This is usually done when the day's meal is prepared. This work is stressed in the long run and the performance of the work comes out more meaningfully as a model of how a selected culture, in this case the Iron Age, as well as our own culture, should be understood as a whole.

Burning pottery:

The pupils try to excavate and reconstruct kilns from the Iron Age as the season permits. Moreover, they try to fire earthenware in types of kilns from the period c. 800 BC - 600 AD. The pottery kiln from Hasseri near Ålborg, Denmark, will eventually be reconstructed. There arise discussions on the kilns, the fire and the firing techniques in the Iron Age and in modern times. During these talks the difference between oxidated (red) and reduced (black) firing is discussed.

The kiln is filled with earthenware which may be the student's own products from the home school if they are totally dried. Firewood is fetched and split and the kiln heated. Next clay is dug from the clay hold and kneaded to a consistancy of porridge, ready for use in closing the kiln. While the first part of the firing takes place the entire process is explained to the pupils.

The farming:

During this excursion the pupils get an idea of the Iron Age farmer's daily life: the constant struggle to provide food for man and beast. By letting the pupils work with the animals, the tools, and the soil, it is hoped that they gain insight into the demands nature placed on man and how man met these demands in order to escape starvation. The students live in one of the reconstructed houses and beyond the wattle work fence surrounding the village, lies only field, forest, bog, lake, and grazing ground. It is difficult to decide what task to attempt in a single day, however, the time of year is a great determinant. In the spring the soil must be tilled with wooden spades and hoes, and the

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ard is used for ploughing. Later the crops must be tended and weeded. A good harvest is hoped for and on the fall excursions the pupils are sent to the fields with sickles to harvest the winter's supply which will be stored under the roofs. Afterward the crops are threshed or new ground cleared and trees felled. If the ard or other tools are worn they must be repaired. Besides all the field work the animals must be cared for on a daily basis.

Weaving:

From bog finds and burials various garments for both men and women are now known to us. At the weaving workshop some of the most interesting specimens have been reproduced on looms documented as having been used in the Iron Age. Both the copied garments and the looms are shown to the pupils and if time allows they are able to try some of the garments on. As part of the practical work the pupils try some of the easier braiding techniques such as "slynging" and "slendring" which are prehistoric techniques for making sashes and belts for garments. Although they are termed "easier techniques" they are not so easy and the Centre is very often obliged to limit the enrollment to only students from the fourth school year and up, since the dexterity demanded is great enough to trouble younger children. Also, there are possibilities to treat wool, spin on handspinners, and use the spun yarn on warp weighted looms. The pupils also have a chance to become familiar with a brick loom and its operations. Setting up a brick loom is very time consuming and cannot be done during an excursion, but the instructors are given information sheets which will enable them to continue the activity at the home school.

The Iron Age Camp School:

It is possible to order three activities and an instructor for each group from the Centre. The work periods on a camp school day are from 9.30 - 11.00 and from 12.30 - 14.00. The Iron Age workday was of course much longer but this is usually all the pupils are able to manage. Besides, there are many other activities at the Centre during the rest of the day. Before a class comes to the Centre they receive preparational material assembled in five boxes, each of which covers a distinct item.

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- the teacher's box: series of colour slides, booklets on the subject and a list of readings

- the excavation box: objects and artifacts for building up an archaeological "find"

- women's clothing box: woven clothing, belts, shoes etc

- men's clothing box: shirt, cape, trousers, shoes etc

- crops box: sickle, threshing mallet, grinding stone

- household box: pots and pans - copied earthenware and household tools

Prices: (1)

20 Dkr. per person for a day and an overnight stay
100 Dkr. per instructor for a day
250 Dkr. for materials for the stay

In addition there is the cost of food which may be brought and prepared in the kitchen at "Sønderhus".

Class Visits:

For a class visit to the Centre the teacher and the class do the entire preparation in advance. The focus of such a visit will be the surveying of the living workshops: weaving, pottery, firing pottery, forging and plant dying. Besides the revived milieus with houses and fences is the prehistoric village, - the core of the Centre - the smallholder's house, "Hørhavehus", and the African village. In these settings old breeds of husbandry animals are placed. To create the best situation for all forms of visits, the following rules have been set:

- class visits only after noon

- class visits must be announced to the school service in advance of arrival.

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(1) Price spring 1976

To prevent the many activities on the large terrain of the Centre from becoming confusing to the pupils the Centre advises that:

1. the visit is scheduled after the preparatory class work at the home school has been done ie in the middle of or late in the course

2. that the teacher visit the Centre before the visit or at least plan what work should be accomplished since few can cover the whole Centre.

The morning hours of a visiting day can be used to visit the monuments of cultural history in the immediate area. Nearly all historic and prehistoric ages are represented, and of course the nature itself is not to be neglected (see the back of the school service guide).

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RESUME OF THEORY BEHIND THE HISTORICAL-ARCHAEOLOGICAL RESEARCH CENTRE'S CULTURAL ECOLOGY PROGRAMME 1976-1979

Today, the study of history at school could take as its starting point the concept of human and cultural ecology. This origin renews and strengthens:

1. the correlation between student's questions, "who am I?" and "why is the world so?" and the possible disclosure of answers found by perceiving themselves in time and orientating themselves with present day situations

2. the connection between the educational value of history and the purely scientific use of history as a research tool which, with reasonable balance and selection, can elucidate results of methodologies

3. the relationship between values in our own present society and other societies more remote in time and space and the backgrounds of a given society's fight to survive the exploitation of near or distant resource fields and sources of energy

4. the association of our current social morals with: the conflict between individual freedom and national power structures and ideologies, the clash between rich, heavy resource-consuming countries and poorer, developing nations, and the struggle between man's attrition and rootlessness and his need for harmony, peace of mind, and identity in an industrialised society

5. the selection of historic material, the quantity of which is burdening history's potential to shape attitudes

6. the communication of basic proficiencies

The transmission of energy from nature to a given society is influenced by a number of factors in the society. These factors, namely:

- the distribution of privileges, both social and political

- the capital of knowledge and of expertise needed for technology

- the manpower available

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- the co-operation and concurrence with other groups
- the marketing possibilities
- the cultural assessments (of political, social, religious, and aesthetic character) can maintain, alter or block the energy transmissions.

Throughout time, societies build up specific culture traits. These can be:

- static
- dynamic
- socially uniform
- socially heterogeneous

Over the time periods the society's ecology creates through its transmissions of energy, a society in which the possibilities of transmission alter but the inner cultural factors remain static.

Collective factors:

- geographic positioning
- social economy
- social conditions
- religious conditions

Individual factors:

- historic events (in this case without influence on society)
- personalities (in this case without influence on society)

Or the reverse situation may occur, where the energy transmissions remain unchanged while the cultural factors are dynamic. The cultural milieu in both cases can be partly socially uniform and partly socially heterogeneous. Outer cultural factors of the types mentioned previously can change society, eg from a static society with homogeneous social conditions to a dynamic society with heterogeneous social conditions.

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Cultural ecology deals with collective human households and forms of energy and how that energy offers various population sub-groups the foundations for their ways of life. There are continuing energy transmissions from the natural environment to human society and cultural ecology deals with the environmental energy that is accessible to man, seeking to adjust general principles to given cultural milieus. Cultural ecology offers explanations on the origins of patterns and traits which denote a particular society. Since the ways in which man acts are not solely ecological but also political, economic, religious and social, ecology is exclusively an aspect of the study, namely the aspect of interaction between man and the natural environment he has access to.

The energy transmissions take place through short, or as in our time, long and complex chains. At each link in the chain there is a given loss of energy. The carrying capacity of a link is based on where it lies on the energy transmission chain. The closer to the production source, the greater the effectiveness of the energy. The geographic distances, the seasons and many other circumstances connected with the distribution of energy over distances affect the transmission, often limiting, and sometimes blocking its use. However, man has the ability to utilise several energy sources inside a link or to use several links simultaneously, expanding beyond the narrow limitations of biological ecology.

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REGISTER OF WORK PROCESSES

Fields of Resources:	Energy Source:	Transmission of Energy A: (transport, extraction, tools used for this)	Transmission of Energy B: (refining, consumption, tools used for this)
LIVESTOCK	Horses	transport on horseback	
		Harnessing for two and four wheeled vehicles	
	Cattle	oxen as pulling power	cow dung for fuel
			tanning hides
			leatherwork, shoes, belts etc
			leather tents
			milk preserving
	Sheep		textile adornments for the house
	Goats		milking the goats making cheese
			sewing the skins for bellows and clothing
	Swine		meat preserving, smoking, salting, air drying
			"long cooking pits"
	Poultry		wings and feathers for household use

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Fields of Resources:	Energy Source:	Transmission of Energy A:	Transmission of Energy B:
PLANT GROWING	Crops and cultivated plants	transport on stone sledges	ropes, ties, cords of plant fibres
		rolling heavy stones and tools	clay silos for grain storage
		wooden spades and other tools	grinding of dried grain
		clearing tools	baking bread
		ards and supplementary tools	roasting kernels
			storage sheds
			beer brewing
		types of fences (sticks, "skigard", stones)	baking thin bread tools: board, stick, baking plate, kiln
		entrance gates and gates	straw baskets
		garden plants nettles and hops	grinding with hand rotated querns
	Wild seeds	gathering, cleansing, and winnowing	seeds for spices
			lights and fat lamps
			plants for dying textile and other dying media

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Fields of Resources:	Energy Source:	Transmission of Energy A:	Transmission of Energy B:
	Wild and cultivated berries and fruits		berry and fruit storage
			wine brewing from fruit, "bjor"
	Harvest hay	short scythe and supplementary tools	
		hay storage and drying	
	Ash fertilising		
FORESTRY	Cutting leaf	tools for leaf cutting	
		leaf stacks	
	Chopping and gathering fire-wood		
	Cutting timber	transportation of timber (esp. in winter using suppl. tools)	building sheds and other constructions
			bending wood
			stone and grass turf cellars
	Charcoal burning		charcoal braziers
	Tar burning		tar milers and suppl. works
	Bast and bark harvest		tanning with oak bark
			elm bark for fodder and food
			birch bark for baskets
			birch sap

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Fields of Resources:	Energy Source:	Transmission of Energy A:	Transmission of Energy B:
	Branches	willow cutting and necessary tools	willow baskets
	Slash and burn crops	small slash and burn crops and the tools	
HEATHER USE			for household use as fuel
			lashes and ropes
BOG USE		production of peat	peat as fuel
			iron extraction in kilns
			forging on stone anvils
			forging bells for livestock
HUNTING AND FISHING	Salmon and trout fishing	salmon tackle (bouys, nets, sinkers, boat)	fish storage
	Flounders		
	Eels	leisters	
	Pikes and Perch	fishing traps and fences	
	Larger land game (deer, wild boar, and beaver)	traps, scissors, pits and snares	
		weapons (bow, arrow, spear, winter hunting equipment)	
			skis, snowshoes, and bone skates
	Minor land game	traps, snares and catching net	
	Sea birds		

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Fields of Resources:	Energy Source:	Transmission of Energy A:	Transmission of Energy B:
OTHER MATERIALS	Clay	soil and clay transport (hand barrows)	pottery and use of pots
			firing pottery
			soil glazing
	Stones		cooking with hot stones
			rock engravings
	Grassturf		
	Chalk		chalk wall decorations