Journal of Danish Archaeology vol. 2, 1983, pp. 197–204

Rescue Archaeology in Denmark 1970–1982

by KRISTIAN KRISTIANSEN

INTRODUCTION

In 1937 ancient monuments were for the first time generally protected by law in the Conservation of Nature Act (section 2). Previously protection had been voluntary and by 1937 approx. 7,000 monuments had been protected in this way. But now all visible monuments were automatically protected without compensation. The National Museum was given responsibility to decide which monuments were comprised by the law – in principle all those monuments that up to 1937 had remained untouched by cultivation, generally 25% (today 29,000 monuments). However, many exceptions were made by which ploughed monuments were protected and vice versa. Also private excavations of ploughed monuments and sites were prohibited. However, no economic means were ensured to excavate such threatened sites, nor were there any legal means of stopping the destruction of such monuments e.g. by road building. It was not until the revision of the Conservation of Nature Act in 1969 that these monuments were safely protected against destruction without previous rescue excavation. This was secured in the section 49 of the Conservation of Nature Act which runs as follows:

»When during earth work there are found barrows, burial places, settlement sites, ruins or any other fixed monuments, the work shall be suspended in so far as it affects the ancient monument. The find shall forthwith be reported to the Keeper of National Antiquities and the objects found shall be handed over to him on request. The Keeper of National Antiquities shall as soon as possible inform the person who carries out the work whether this may continue or shall be suspended until an excavation has been made or – if steps are taken to acquire the ancient monument in pursuance of subsection (3) hereof – until the question of acquisition has been finally decided. Any excavation shall be completed within twelve months after the date on which the find was reported. The Keeper of National Antiquities shall defray the expenses of the excavation. If the work is carried out on behalf of a public authority, that authority shall defray the expenses.«

Thus, the law calls for a balanced defrayal of expenses – with respect to private landowners the state will have to pay, in all other cases the responsible public authority whether local, regional or other ministries or sections of the central administration, will have to pay. Excavations can only be carried out by the Keeper of National Antiquities or by state-supported museums with professional archaeologists. Any other excavation, e.g. by universities or amateurs needs approval by the central authority, which will normally prescribe the supervision of an authorized museum and an agreement about the preservation of finds.

During the first 5 years section 49 was administrated by the Keeper of National Antiquities, as indicated in the text. But from 1975 it was administrated by the National Agency for the Protection of Nature, Monuments and Sites in the Ministry of Environment which had been founded 2 years earlier and where all administration of the planning, protection and exploitation of our physical environment were brought together in several agencies. However, from January 1st, 1983 it has been decided that the administration of rescue excavations returns to the Keeper of National Antiquities, whereas all other ancient monument administrations remain with the National Agency for the Protection of Nature, Monuments and Sites. This is a result of 3 years of commission work dealing with these problems (note 1).

As the section 49 has now been at work a little more than 10 years, we have a suitable interval for an analysis of how it has worked in practice, just as the return of the administration from the National Agency for the Protection of Nature, Monuments and Sites to the Keeper of National Antiquities offers an opportunity to look back and take stock[2].

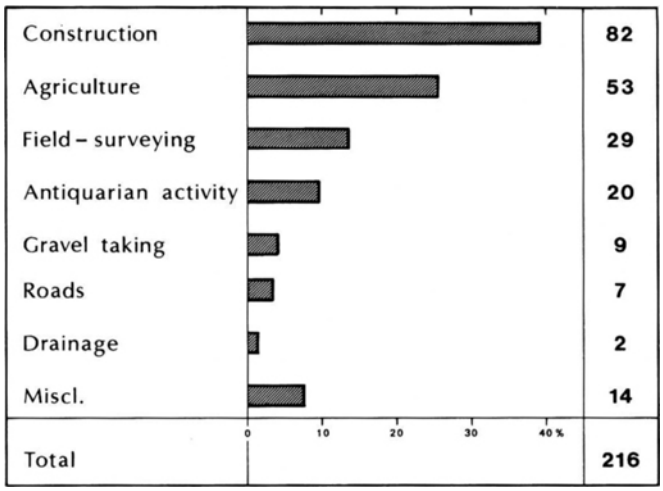

Fig. 1. Diagram showing the most common activities leading to rescue excavations according to section 49 based on the reports of the year 1980. The natural gas project is excluded. *Construction* also includes sewers, etc., but not road building. *Agriculture* also includes windbreaks and gardening. *Field surveying* is mainly linked to urban expansion. *Antiquarian activities* include the various activities that randomly lead to reports of potential section 49 excavations.

	1965	1970	1976	1982
Universities	4	8	10	9
National Museum	8	9	9	11
Ancient Mon. Adm.	3	3	4	8
Regional Museums	6(3)	11(5)	23(5)	41(6)
Total	21	31	46	69

Fig. 2. Prehistoric archaeologists with a major university degree in permanent jobs (full- or parttime) in Denmark in respectively 1965, 1970, 1976 and in 1982. To this should in 1982/83 be added 7 prehistoric archaeologists employed in other institutions, plus 2 in Greenland and 1 in the Faroe Islands. Furthermore, between 25–30 prehistoric archaeologists are employed in temporary jobs, mainly based on rescue archaeology, e.g. the natural gas project. Only 4–5 are working in pure research projects.

WHAT CAUSES RESCUE EXCAVATIONS?

In general we can distinguish between rescue excavations caused by agriculture on the one hand, and by construction works on the other hand.

For the first group no systematic administration can be carried out as agriculture is not regulated. Reporting of monuments under destruction depends solely upon the interest among farmers and their co-operation with museums. Destruction is very gradual and excavation therefore not acute, however, naturally depending on the state of destruction.

For the second group a systematic administration can be maintained as all use of land for construction or gravel taking needs approval either by regional or central authorities. This regulation is a vital part of the physical planning system that was developed during the 1970's in Denmark in the Ministry of the Environment. Destruction is normally absolute and excavation acute.

Rescue excavations caused by the destruction by agriculture represent an old tradition strongly related to the work of both regional museums and the National Museum, which is based on the archaeological goodwill that has built up among farmers throughout the last 150 years in Denmark.

In contrast to this, rescue excavations caused by construction etc. represent a rather new field of research linked to the expansion of towns and infrastructure since the 1950's. The basis for this work is closely linked to the development of the physical planning system throughout the 1970's. Thus its expansion has been linked to an integration with the national, regional and local planning systems which has only taken place throughout the late 1970's, and which has also demanded the development of a new large scale planning of rescue archaeology and the application of large scale excavation techniques. A very good example of this is the

	76/77	77/78	78(¾ year)	79	80	81	82
National Agency	14,1%	27,7%	27,2%	32,0%	12,2%	22,0%	20,1%
National Museum	21,0%	13,1%	17,3%	6,2%	4,8%	3,4%	4,0%
Regional Museums	64,9%	59,2%	55,5%	61,8%	83,0%	74,6%	75,8%

Fig. 3. The economy of rescue excavation since 1976/77 classified according to excavating institutions. In 1981 and 1982 the Natural Gas Project represented appr. 15% of the share of the National Agency.

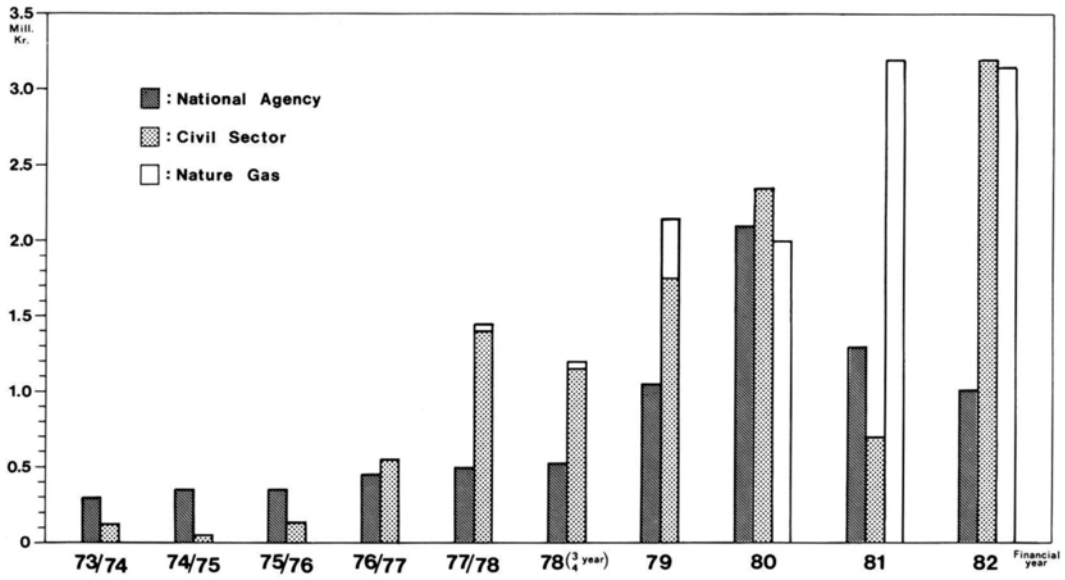

Fig. 4. The economy of rescue archaeology in Denmark since 1973/74 classified according to money paid by the National Agency to private landowners/companies and excavations paid by other public authorities. Among the latter the natural gas excavations have been singled out. Figures for the first 3 years have not been accessible, but conform to the period of 1973–76. The figure represents the official statistics. To this should be added several unemployment excavation projects carried out by regional museums throughout the last 3–4 years. Approx. 1 million D.kr. each year.

rescue excavations preceeding the 2,000 kilometers of gas pipe lines cross-cutting Denmark (3).

Thus, while the number of rescue excavations caused by agriculture has remained more or less stable throughout the last 10 years, the number of rescue excavations caused by construction works has been increasing rapidly since 1976. Fig. 1 gives a representative picture of the situation throughout the last 5–6 years.

ECONOMY AND RESOURCES

While economy is a matter of money, resources refer to the number of institutions, staff, administration etc. available for rescue archaeology. Here again we may distinguish between the archaeological capacity and the administrative capacity.

As section 49 only covers the actual excavation and the excavation report, but not conservation (4) or analyses and samples of e.g. soil, grain, bones etc. the resources of museums are decisive for the preservation and storing of find material. Consequently, the Museum Act of 1977 instructs museums to assist in rescue archaeology according to their capacity for doing so. Let us therefore consider their capacity in terms of professional archaeological staff.

On fig. 2 is shown the distribution of archaeologists in permanent jobs (full- or part-time) in Denmark respectively in 1965, 1970, 1976 and 1982. The figure very nicely illustrates the expansions of regional museums in terms of professional archaeological capacity. If we then take a look at the carrying out of rescue excavations in terms of money throughout later years (fig. 3) it will be apparent that the increase of professional archaeologists at regional museums corresponds to an expansion in the engagements in rescue excavations.

The background of this expansion in economy and resources is further illuminated in fig. 4 showing the total funding of rescue archaeology since 1972–73, classified according to excavations paid by the National Agency (private landowners/companies) and excavations paid by other public authorities/institutions. Among the latter the natural gas excavations have been singled out.

In the early seventies figures were rather low and most of the money was spent on private landowners, that is excavations of mainly ploughed barrows due to the reporting of landowners through their local and regional museums. In 1975 the administration of Ancient Monuments was transferred to the new Ministry of Environment and from 1976–77, and especially 1977–78,

the share of rescue excavations paid by other public institutions increased rather drastically. This reflects the first phase of a more systematic integration of the rescue administration in the physical planning system combined with an increasing awareness among museums of the potential of section 49. During the first years larger road projects were dominating, but in recent years also regional and local building and construction works carried out by county and municipal authorities have increased their share. This reflects an increasing engagement and co-operation between regional museums and counties and municipalities (5).

The decline in 1981–82 was mainly due to the economic recession and the increasing demands of the natural gas project on the regional museums, which carry out all final excavations.

Thus, figures 2–4 reflect the expansion of rescue archaeology in Denmark both in terms of administration and in terms of resources. During the first years, when the archaeological capacity was low both centrally and at regional museums, money was mainly channelled into traditional excavations of ploughed barrows due to agriculture – a continuation of a hundred year old tradition of rescue archaeology. With the increasing number of professional archaeologists employed at regional museums throughout the 1970's, the archaeological capacity for rescue archaeology was significantly raised. When from 1975–76 the rescue archaeology was systematically applied to and integrated in the physical planning system, at first at a national level and in later years also on regional and local levels, the foundation was laid for a significant expansion with the National Agency as administrative coordinator and regional museums as excavators. In terms of number of excavations they are generally carrying out 80–90% of all rescue excavations in Denmark, whereas the National Agency has mainly concentrated on planning, field surveying and test excavations on larger national projects such as the natural gas project.

Thus the very strong and old archaeological traditions for rescue archaeology at many Danish regional museums have been decisive for the de-centralized expansion of rescue archaeology in Denmark since its beginning in 1970. But to this should also be added the decentralized structure of the Danish physical planning system divided into a national level (Ministry of Environment), a regional level (counties) and a local level (municipalities). Although all authority has remained with the Keeper of National Antiquities, later the National Agency and now again the Keeper of National Antiquities, they have advised regional museums to cooperate directly with county- and municipal administrations in all matters that do not demand central approval in the Ministry of Environment, as this represents the larger proportion of land use for construction and building activities in Denmark. Such regional administrative co-operation, which in cases of actual rescue excavations needs central approval (6), has until now only been established in approx. 40–50% of all counties and municipalities. Thus, there is still potential for expansion at regional and local levels.

PLANNING AND PRIORITIES

Planning refers both to administrative and archaeological procedures. Administratively a major objective has been to develop a preventive practice by integrating rescue archaeology in the physical planning system. This implies that all construction plans have been subject to archaeological control before their approval by respectively the National Agency (large scale projects demanding central approval in the Ministry of Environment) and regional museums (small scale projects demanding regional approval in the county administration). To support this procedure EDP drawn maps of all registered monuments and sites (approx. 120,000) have been put at the disposal of the county administrations as a basis for their co-operation with museums. In this way potential sites may be pointed out already in the planning phase, making possible changes and adjustments in order to preserve archaeological sites, or – if that is not possible – long term planning of rescue excavations.

The subsequent archaeological planning normally includes three stages: Field surveying, test excavations and final excavations. Test excavations are carried out in order to determine the information value of the site. All sites that yield datable information on prehistoric constructions in a definable context will then be fully excavated within the exploited area. In general this represents approx. 20% of all recognized sites. Taken as a whole approx. 50% of all reports on potential section 49 rescue excavations have resulted in some sort of excavation, small or big. Between 1970–82 approx. 1,000 rescue excavations have been carried out. Today most excavations are carried out with the use of machinery of

various types, at settlements sites in order to strip large areas for house plans, pits etc., at barrows to reveal previous ritual activities – fencing, ploughing, wooden chambers etc.

The stepwise excavation procedure described above has been applied in order to maximize archaeological information and economic ressources through priorites at each level.

With respect to priorites section 49 does not require that all threatened sites must be excavated. It does say that all sites that are discovered and threatened must be reported immediately to the central authority which then decides if an excavation shall be undertaken. Three basic criteria have been employed for such a decision:

1) The actual threat against the site or monument (is it absolute or relative).
2) The actual condition of the site, which is decisive for the quality of the information that it holds.
3) and finally the scientific relevance of the site and its information.

Criteria 1 and 2 in combination are generally regarded as most decisive and criteria 3 is applied in situations where shortage of money or time pressure demands a priority between well preserved objects. Thus the general respect for the individual monument which is implied in section 49 combined with the need for a homogeneous administrative practice has been and still is the most decisive element. Priorities may, however, take place more indirectly as part of the planning process. Thus the general administrative practice – that field surveying and the pointing out of potential sites for rescue excavations takes place before the approval and carrying out of the construction work – has made it possible to influence and change the planning in such a way that certain types of monuments are preserved and others excavated. This preventive administrative practice has been most successfully employed in the natural gas project where it has been possible to curve the pipe lines in between all known monuments, mainly barrows which have been excavated by the thousands throughout the last 200 years. Consequently, only settlement sites are excavated, in many areas for the first time.

However, it should be remembered that priorities also take place even before reports reach the central authority, that is, when regional museums decide what to report. This is most pronounced in the case of rescue excavations on agricultural land where in principle all ploughed sites are under threat. But the increasing number of rescue excavations preceeding construction works has made such random priorities less dominant.

Burials	76/77	77/78	78	79	80	81	82
Stone Age	191	441	647	479	223	132	323
Bronze Age	127	14	80	162	126	45	98
Iron Age	9	330	10	311	704	354	199
Medieval/Hist. per.	47	117	30	5	1416	3	9
Total	374	902	767	957	2469	534	629
Settlements							
Stone Age	39	57	56	205	200	141	95
Bronze Age	176	275	360	115	26	20	32
Iron Age	193	244	343	555	1130	563	1727
Medieval/Hist. per.	100	145	80	171	432	249	1116
Total	508	721	839	1046	1788	973	2970
Miscl.	116	221	66	413	171	206	337

Fig. 5. The number of rescue excavations since 1976 classified according to period and type. Miscellaneous includes undated sites, but not field surveying. It should be noted that the number of excavations is defined by location, not by number of excavated objects. One excavation may include e.g. 3 ploughed barrows.

Let us, however, take a look at some general trends in the distribution of rescue money on the main archaeological periods and groups of finds (fig. 5–6). The basis of these figures is the annual statistics that have been worked out to serve as a basis for the priorities of the *Ancient Monument Board*, which was founded in 1976 in order to advise the National Agency with respect to the general planning and priorities of rescue archaeology. The board represents regional museums, the National Museum, and the universities and all reports on potential rescue excavations have been presented to them at their meetings 6 times per year since 1976.

If we first look at fig. 5 showing the number of excavations, several trends are discernable. For burials the number of excavations declines from the Stone Age to Medieval historical times, although Iron Age burials have increased their share in recent years. This is obviously due to the visibility of most Stone Age and Bronze Age monuments, mainly barrows, in opposition to Iron Age and Medieval historical burials below ground level. And in the case of Medieval burials most of them have been destroyed by the continuous use of the churchyards since Medieval times.

Burials	76/77	77/78	78	79	80	81	82
Stone Age	16	18	21	18	14	5	27
Bronze Age	11	2	4	11	11	9	7
Iron Age	5	8	1	18	21	11	11
Medieval/Hist. per.	5	1	2	1	2	2	2
Total	37	29	28	48	48	27	47
Settlements							
Stone Age	4	3	7	11	11	4	11
Bronze Age	3	4	3	4	3	5	4
Iron Age	7	11	15	21	34	23	24
Medieval/Hist. per.	4	5	7	12	13	7	13
Total	18	23	32	48	61	39	52
Miscl.	13	10	3	18	6	10	12

Fig. 6. The economy of rescue excavation since 1976 (in hundred thousands) classified according to period and type. The excavations of the natural gas projects are excluded from both fig. 5 and 6, just as money for conservation (7). Thus the total of each year does not correspond precisely with fig. 3. Miscellaneous include undated and atypical sites, field surveying/test excavations, underwater surveying.

The most pronounced trend among settlement excavations is the general increase since 1976–77 within all periods and compared with excavations of burials it becomes even more significant. This reflects the dominant interest in settlement archaeology today in combination with the planning procedures described above favouring settlement sites (it should be noted that the natural gas excavations are excluded from these figures. They would increase the numbers by several hundred percent since 1980).

However, the number of excavations will only give a hint of the importance and the extent of excavations. This is better reflected in their relative share of money, according to period and category of find (fig. 6).

Also here we see a trend towards a relative increase of settlement excavations, but not so pronounced. Most significant, perhaps, is the increase of Stone Age and Iron Age settlement excavations compared to Bronze Age excavations. This is to some extent also due to the character of the evidence. Whereas Stone Age and Iron Age settlements are rather easy to locate due to the preservation of, respectively, flint tools and pottery, fireplaces, hammerstones etc., Bronze Age settlements normally leave rather scanty traces. To this should be added that both Neolithic and Bronze Age settlements are often destroyed by a later more extensive Iron Age settlement. Therefore the rather big relative share of Iron Age settlements probably represents a consistent feature in years to come.

With respect to burial excavations the Stone Age and the Bronze Age are mainly represented by ploughed barrows and megaliths, whose relative share has decreased compared to Iron Age and Medieval burials, although the very high figure for Medieval burials in 1980 is due to one very large cemetery. The rather stable figures for Stone Age and Bronze Age burials, compared to the fluctuating figures for the Iron Age and the Medieval period, also reflect the different properties of the data. Burials and cemeteries below ground level from the Iron Age and the Medieval period are rather difficult to recognize in comparison to barrows and megaliths from the Stone Age and the Bronze Age. Consequently, some years will show very low figures and other years high figurs, especially in cases of big cemeteries.

Thus, it can be said that the general trends indicated in fig. 5 and 6 are due to a combination of the properties of the archaeological data on the one hand and an increasing priority of settlement excavations on the other hand.

Finally on fig. 7 is shown the cost levels of, respectively, burial and settlement excavations, plus unspecified excavations mostly with burials and settlement structures in combination. As seen, most burial and settlement excavations are small scale excavations, although settlement excavations tend to be more expensive. Very costly large scale excavations are rare. Thus fig. 7 illustrates both priorities and levels of destruction, only few sites deserving a full scale excavation.

SUMMARY AND CONCLUSION

The period 1970–80 was characterized by a rapid expansion of museums in terms of professional staff, resources for exhibitions etc. and an expansion of the administration of rescue archaeology, especially during the period in the Ministry of Environment. Quite evidently, this situation had a great potential for both conflict and co-operation in terms of the carrying out of excavations by the central authority or regional museums. While the central authority in the Ministry of

Environment from 1976 and onwards concentrated on developing the administrative basis for rescue archaeology – resulting in a rapid increase of economic resources – museums concentrated on carrying out excavations and on picking up potential rescue excavations through co-operation with the county and municipal administration.

Thus, rescue archaeology in Denmark is still in a state of expansion and has only recently developed a museum capacity and an administrative structure that can begin to cope with the rapid destruction of monuments in modern industrial society.

The rapid expansion of rescue archaeology throughout the last 10 years has also resulted in problems with respect to the conservation of finds and post excavation analysis of environmental and zoological data. Whereas the capacity and the facilities for conservation have increased rapidly in recent years, the capacity for environmental and zoological analysis is still very limited and has not been geared to the present volume of archaeological excavations. Therefore, it is vitally important to expand this field of research. Otherwise, the continuous accumulation of archaeological houseplans, pits etc. will soon become trivial.

Another major concern of rescue archaeology will be to continue the development of the methodology of field surveying and excavation, both in terms of applying new techniques (e.g. air photography, georadar etc.) and in terms of linking field surveying to the development of regional settlement models enabling us to predict the most likely locations of settlements within different regions.

Thus, in terms of developing a research structure that can cope with the scientific potential of rescue archaeology in Denmark, there is still much to be done.

Kristian Kristiansen,
The National Agency for the Protection of Nature,
Monuments and Sites,
Fredningsstyrelsen,
Amaliegade 13,
DK–1256 Copenhagen

NOTES

[1] At the same time the administration of the Conservation of Historical Shipwrecks Act was transferred from the Keeper of National Antiquities to the National Agency. Thus protection in situ of cultural heritage lies within the responsibility of the National Agency, while the administration of (rescue) excavations is entrusted to the Keeper of National Antiquities.

Cost levels in Kroner	Settlements	Burials	Unspecified
< 15.000	32	35	3
15 – 25.000	8	6	2
25 – 50.000	11	2	1
50 – 100.000	4	1	1
> 100.000	2	3	2

Fig. 7. Settlements, burials and unspecified excavations classified according to cost level. 1980 has been chosen as a representative year. Unspecified mostly includes sites with both burials and settlement structures. Therefore figures do not correspond precisely with fig. 5.

[2] The following analysis is mainly based on the yearly report of the »Ancient Monument Board« published since 1976. The Ancient Monument Board was founded in 1976, after the transfer of the ancient monument administration from the *Keeper of National Antiquities* to the *National Agency for the Protection of Nature, Monuments and Sites*. In the yearly reports on the activities of the Ancient Monument Board the National Agency has provided statistics on rescue excavations and the distribution of rescue money.

The period 1973–76 is based on an unpublished analysis of rescue archaeology that was worked out in 1976 by Jens Bekmose for the National Agency.

Finally, a general account and discussion of rescue archaeology was given by Kristian Kristiansen and Mogens Ørsnes in 1980 for a government commission on ancient monument administration in Denmark founded in 1979. This account was published in 1981 by the National Agency in a conference report.

I want to thank Jens Bekmose and Torben Dehn for advice and critical comments.

[3] An account of the integration between the Danish Physical Planning System and the Ancient Monument Administration is given by Kristiansen (in press) and will therefore not be stated in this article. It is to appear in »*Approaches to the Archaeological Heritage*. A Comparative Study of World Cultural Resource Management Systems.« Editor: Henry Cleere. Publisher: Cambridge University Press.

[4] Normally a stabilizing conservation is provided by section 49. In general, however, museums carry out all conservation except in extraordinary cases. Full excavation reports must be delivered not later than one year after the completion of excavation. All reports are registered and stored centrally in the National Museums.

[5] This development is also reflected in the increasing economic share of municipalities compared to county and state institutions throughout the last 5–6 years in terms of money for rescue excavations, from 25% in 1976/77 to 60% in 1980. The increasing share of municipalities is mainly due to the expansion in land-use for urban purposes. In most cases land is prepared for development by the municipality (including rescue excavations) and is then later sold to the builder.

[6] The National Agency has devised provisional administrative regulations for museums in order to minimize central engagement and prevent parallel work being carried out centrally and regionally. This imp-

lies that central approval has normally been passive – positive action was only taken when problems arose. At the national/larger regional level – motorways, natural gas etc. – the National Agency made contracts with regional museums defining procedures and responsibilities. Here the Agency supervised all planning, economy and field surveying, while regional museums carried out final excavations. Thus the National Agency has aimed at an administrative divison following the structure of the physical planning system, but with the Agency as responsible authority according to the lawtext of section 49.

[7] In 1981 and 1982 conservation expenses at one large iron age cementery amounted to appr. 250.000 kr. each year, which is extraordinary. It should be noted that the figures listed in fig. 6 and 7 do not always include the full costs of an excavation. Often museums assist with their own excavators and counties or municipalities supply machinery and unskilled labourers. As it may be assumed that such invisible expenses are distributed at random the general trends in fig. 6 and 7 can be regarded as representative.