

CULTURAL RESOURCES MANAGEMENT IN JORDAN

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by

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1. What is CRM?

Cultural Resources Management (CRM) is a term created over twenty years ago in the United States to describe a variety of procedures and techniques used for the protection of the archaeological heritage from destruction due to development and other causes. CRM—in a way—is practiced all over the world, but not necessarily under this label (Palumbo 1992b).

Protection of cultural heritage includes both salvage excavations and more effective management measures. While salvage is conducted to minimize damage to cultural resources during construction and development, coordination between developers and antiquities services during the design and feasibility study of new projects limits the need for salvage excavation during construction. Coordination is the only approach under which cultural heritage can be properly protected, and this is the approach that the joint Department of Antiquities of the Hashemite Kingdom of Jordan-American Center of Oriental Research (ACOR) CRM program adopted.

In brief, cultural resources are "all cultural materials, including cultural landscapes, that have survived from the past (... and) have some potential value or use in the present or future" (Lipe 1984: 2). In Jordan, however, there are some technical issues which have to be considered: the Antiquities Law protects only those monuments and remains—whether above or below ground—which pre-date the year

AD 1700. This leaves unprotected the last three hundred years of human activity and architecture in the country, which only recently have become the focus of legislative and research-oriented initiatives (Biewers 1987; 1993; McQuitty pers. comm.; McQuitty and Lenzen 1989; NES 1991; Noca 1985; Palumbo 1992b; Rifa'i and Kana'an 1989; SDC 1990).¹ The CRM project, however, does not apply a rigid distinction between "archaeological" and "traditional" heritage. Finally, the word "management" needs clarification. In our view, "management of cultural resources" includes:

- a) preservation of the archaeological heritage with careful restoration or "soft approaches" (for example the inclusion of an endangered site as part of a green area);
- b) protection of this heritage in the short and long terms by planning for the creation of archaeological parks;
- c) the organization of rescue archaeological projects² conducted in advance of construction with the aim of reducing the risk of needless destruction of archaeological resources;
- d) the organization of a computerized national inventory of known archaeological resources, and the proper integration of these resources into Jordan's community life;
- e) adequate coordination with all governmental and private agencies involved in development, in order to reduce threats

1. See also the papers presented at the fourth and fifth conferences on the History and Archaeology of Jordan. At the fifth conference, which was held at Irbid in April 1992, a whole session was dedicated to vernacular architecture, while several more papers dealing with the recent past were

also given during the sessions dedicated to agriculture and hydrology.

2. As opposed to salvage archaeology, a term that we use to describe last-minute efforts to save what has been almost totally destroyed by construction or other activities.

to cultural heritage sites.

For each of these aspects there was the attempt to advance it to a point where the protection and enjoyment of cultural heritage is an obligation and a right not only for the Department of Antiquities of Jordan, but for every citizen.

Recent studies (Lambrick 1985; Macinnes and Wickam-Jones 1992) show that the protection of cultural and natural resources go hand-in-hand: both involve the protection and conservation of limited, non-renewable resources. UNESCO and the World Bank do not make distinction between natural and cultural resources: both are part of our common heritage, and both require the same level of thoughtful attention and expertise. Recent projects such as the *National Environment Strategy for Jordan* (NES 1991) and the Badia Project are an example of such an approach being adopted in Jordan. The CRM team concentrated on the protection of cultural resources (including what we called "cultural landscapes", i.e. the integration of natural and human-modified environments) because of the nature and constraints of our expertise, while more specific environmentalist actions were conducted by NGO's such as the Royal Society for the Conservation of Nature.

2. Genesis of the CRM Project in Jordan

While the use of "CRM" as a term employed to describe a precise program of cultural heritage protection in Jordan dates back only to 1987, there are many examples of earlier "CRM" projects: Harding's excavations at the Amman citadel in the 1940s, the 1950s Jordan Valley Point 4 Survey (Mellaart 1962; de Contenson 1964), the Citadel Museum Excavations in the 1970s, the Jordan Valley Survey in 1975-1976 (Ibrahim, Sauer and Yassine 1976; 1988), the APC Township Survey in 1977 (McCreery 1977-78), the emergency surveys of Maqarin, Wadi al-'Arab, and Wadi Zarqa (King

Talal) reservoirs in 1978 (Kerestes *et al.* 1977-78), Jarash-al-Husn road in 1984 (Leonard 1987), Na'ur-Dead Sea road (Coughenour 1986), and in the Basalt Desert (King 1990), salvage excavations at Amman Airport Temple in 1976 (Herr 1983), 'Ain Ghazal (Rollefson, Simmons and Kafafi 1992, with bibliography), Jarash (Sma-deh, Rasson and Seigne 1992), Tell Safat (Wimmer 1987), Sahab (Ibrahim 1972; 1974; 1975), Umm al-Bighal (Helms and McCreery 1982). Yarmouk University also conducted excavations at Jabal Abu Thawwab (Kafafi 1985; 1986; 1991), Tell ash-Shuneh (Gustavson-Gaube 1985; 1986), Abu Hamid (Dollfus *et al.* 1988). Countless salvage excavations were conducted by Department of Antiquities personnel [very often tombs found during bulldozing, but also major sites such as Beit Ras (Shraideh and Lenzen 1985), Khilda (Najjar 1992), or complex sites such as the Zurrabah kilns (Zayadine 1981; 1982)]. All these projects show various degrees of "management" of cultural heritage. Some are examples of desperate round-the-clock operations to save what was left behind by the bulldozers (Umm al-Bighal), others were planned projects conducted in advance of construction, such as the Reservoir surveys, the Jarash and Na'ur road surveys, and the 'Ain Ghazal project. Planning provided the developers with information concerning the presence of archaeological sites, and the archaeologists with a better knowledge of the effort needed to avoid needless destruction of these resources.

By the late 1970s, however, it was clear that the pace of development was seriously endangering the survival of a large number of sites. A different approach was needed; salvage archaeology or case by case surveys conducted through the goodwill of project engineers and funding agencies were not enough. These movements towards a CRM project are indicated by proposals and recommendations formulated by

Linda Jacobs and David McCreery in 1980, by David McCreery and James Sauer in the pamphlet *Economic Development and Archaeology in the Middle East* (dated 1982 or 1983), by Helms' Pilot Project proposal dated 1983 (a 12 point plan aimed at establishing a permanent office for Rescue Archaeology within the Department of Antiquities [DAJ], training students of archaeology in rescue techniques, fostering cooperation between Jordanian development agencies and the DAJ, and promoting public awareness among the Jordanian citizens), and by Moawiah Ibrahim's proposal submitted to the Tuebingen Conference on the History and Archaeology of Jordan. This proposal outlined the importance of survey in areas under development, the necessity for better staff training and public awareness campaigns aimed at educating the public on the importance of cooperating with archaeologists in the protection of a common heritage.

By 1985, ACOR Director David McCreery was able to join forces with the Department of Antiquities in preparing a proposal to the United States Agency for International Development (USAID) for financing the first phase of a training program in Cultural Resources Management. This project, the first of its kind in the Middle East, had the support of Dr. Adnan Hadidi, then DAJ Director General, and of Dr. Stephen Lintner, then Environmental Coordinator for Asia and the Near East at USAID.

The main points of the project proposal included plans to link conservation of cultural resources with development planning (and in this respect the hiring of a Planning Consultant charged for coordination stressed the importance of this side of the project), assisting in the creation of an infrastructure for coordination between DAJ and development agencies, and the coordination of the archaeological survey of Greater Amman. Training of DAJ person-

nel and Jordanian students in archaeological field techniques, and the organization of training seminars and other public awareness programs were also an important component of the proposal. For several reasons the project was not implemented until 1987, when the first activities of the CRM project began.

3. Activities of the CRM Project in Jordan, 1987-1992

The first activities initiated by the CRM project included the initial attempts to create a network of liaison officers at various ministries and development agencies. With this network in place, it was much easier to monitor new developments and receive advance notice of a new construction project. The system of liaison officers knowledgeable of CRM procedures and techniques also provided an opportunity for spreading public awareness—even if just at the governmental level—on the importance of preserving Jordan's archaeological heritage.

Field projects also became an important part of the project. The first field project was the salvage excavation at the Amman Citadel, which was conducted after the Ministry of Education initiated bulldozing operations on the second terrace of the Amman Citadel (Jabal al-Qal'ah) for the foundations of a new school. The school was never built, but the salvage excavation took a good deal of time and effort by the CRM team (Zayadine, Najjar and Greene 1987; Greene and 'Amr 1992). The second important field project conducted during the first two years of the CRM project was the Archaeological Survey of Greater Amman (ASGA). This led to the discovery of a large number of archaeological sites in the area of Jubeiha, a newly constructed residential area to the east of the campus of the University of Jordan (Abu Dayyeh *et al.* 1991). ASGA did not continue beyond this first phase, but its accomplishments had

far-reaching effects, which must be noted:

1. ASGA stressed the importance of an archaeological survey conducted within the boundaries or in the vicinity of a large urban area with the aim of proper and accurate recording of all the archaeological remains presently visible [similar projects were the Irbid-Beit Ras survey of Lenzen and McQuitty (1988) and the Jubeiha survey of Muheisen (1987)];
2. ASGA was conducted with the knowledge and full support of the Municipality of Greater Amman, which benefited from the information gathered in terms of better knowledge of the cultural resources present within the municipality's boundaries, so that these could be taken into consideration during zoning and planning decisions;
3. a computerized database was developed for ASGA, including a graphic module based on AutoCAD³ which displayed the locations of the sites found on a digitized base map of the survey area.

The pioneer work of ASGA, therefore, served not only the purpose of surveying an area under threat and of training DAJ personnel in the techniques of field survey, but also (and perhaps more importantly) served the need to demonstrate that archaeological surveys around rapidly developing urban areas *must* be part of the planning process. Of critical importance to the continuing work of CRM, ASGA also pointed out that computerization of data with the help of a graphic interface can be an effective component in the management of such data.

Other archaeological projects were also conducted during the first two years of the program, mostly short visits conducted by the CRM team to check on possible damage to archaeological sites due to new public construction projects.

Training, as already mentioned, was an

important component of the CRM program. It included workshops conducted at the Department of Antiquities and at ACOR, and exercises on the processing of ceramics for publication.

The activities of the CRM Planning Consultant, in the meantime, included close coordination with the Ministry of Public Works Road Department to protect sites found along the alignments of several projected highways. Sites chosen by the Urban Development Department (now the Housing and Urban Development Corporation) were visited before final plans were prepared. Coordination with the Amman Municipality resulted in agreements for the temporary protection of the Neolithic site of 'Ain Ghazal and a study conducted for the development of the Amman Citadel.

All these activities were a good start for the CRM project, but the end of the two-year project came without having achieved an effective integration of such CRM techniques into the daily routine of the Department of Antiquities or development agencies. ACOR and its new director, Dr. Bert de Vries were committed to the continuation of what had been a largely successful program. A proposal for the continuation of the project introduced the possibility of a computerized database to store information on archaeological sites all over Jordan, and restated the commitment to improve coordination among DAJ and governmental development agencies.

The next two years of the CRM project, 1989-1991, saw a change in staff, the beginning of the task of preparing a complete database for Jordan's antiquities (below), a more concentrated effort on the preparation of coordination procedures between DAJ and development agencies, and the first archaeological projects conducted by DAJ with funding provided by construction con-

3. The database and the graphic module were developed by CDG Management and Associates, P.O.

Box 925740, Amman. AutoCAD is a trademark of Autodesk Corporation.

tracts. These activities, however, were drastically curtailed during the period of the Gulf crisis, August 1990 to January 1991, and were interrupted for four months between January and April 1991. This led to an extension of the grant, which was carried into early 1992.

The main field activities in the period 1989-1991, were the Tell Ashi'r-Kufr Yuba project, where dolmens were excavated in the vicinity of the new road from Irbid to Tell ash-Shuneh (section I), the Tell Abu Thawwab project, a Pottery Neolithic and Early Bronze Age I site along the new highway from Amman to Jarash (section III), and the salvage excavation of a Roman fort near the Zarqa river, seven kilometers south of Jarash, also along the new highway to Jarash and Irbid (section II). The first two projects were financed with sums provided by the Ministry of Public Works and Housing in the construction contracts, and were managed by the Department of Antiquities of Jordan. The Tell Abu Thawwab project was conducted by Dr. Zeidan Kafafi of Yarmouk University (Kafafi 1985; 1986; 1991). The salvage excavation of the Roman fort near Jarash indicated a continuing need for communication between the Department of Antiquities and development agencies (in this case the Ministry of Public Works) (Palumbo 1992a; Palumbo *et al.* this volume). For four months the Jarash office of the DAJ, with the assistance of the CRM team, conducted a desperate salvage excavation, when attempts to modify the road alignment failed. Road construction resulted in the loss of an important structure of the second century A.D., now buried under the asphalt of the highway. This resulted in an unbudgeted expense of several thousand dinars to underwrite the DAJ/CRM salvage effort, and a re-organization of the construction schedule. The entire situation was the opposite of what the CRM project was trying to achieve. If coordination between the Ministry of Public Works

and the DAJ had occurred in the earliest stages of design, no damage whatsoever would have occurred to the site, which was already visible on the surface. Instead, poor communication and misunderstandings between parties led not only to the partial destruction of a potentially important site in Jarash's history, but led also to large unbudgeted expenses for the Department of Antiquities.

This incident showed that more effective efforts in the area of liaison and coordination had to be made by the CRM project. The network of liaison officers was expanded and serious efforts were put into the establishment of standard coordination procedures, and into the institutionalization of the CRM project within the Department of Antiquities. At the same time, the CRM Planning Consultant contributed to the preparation of Chapter 11 (Cultural Component) of the *National Environmental Strategy for Jordan*, while the CRM Archaeologist studied and began implementation of the new archaeological database, the Jordan Antiquities Database and Information System (JADIS, see below).

With the assistance of ACOR Director, Dr. Pierre Bikai, and DAJ Director, Dr. Safwan Tell, and the approval of USAID and the Ministry of Planning, the CRM project was renewed a third and final time, from 1992 to 1994. The goals of this third project, currently underway, are to a) complete JADIS, b) implement standard procedures of coordination between development agencies and DAJ, and c) help the DAJ in setting up its own CRM office.

Field activities between 1992 and early 1993 included a large number of preliminary field visits to areas endangered by new construction projects, but also a more organized approach was instituted. This approach now includes the preparation of Cultural Resource Impact Assessments which are made available to liaison officers and persons involved in the preparation of new

project designs. These assessments help the developers to understand the significance of archaeological sites in areas under development, while also providing essential information such as their location and relative importance, so that the sites can be properly considered during the design phase of a new project. Major field activities conducted under the new approach included the Beit Ras rescue excavations, managed by the Irbid office of the Department of Antiquities, the Ras an-Naqab-Aqaba emergency survey, and the Tafileh-Ghor Feifeh survey, both of which were conducted by a team from DAJ (Bisheh *et al.* 1993; Waheeb 1993), and funded by sums provided by the Housing and Urban Development Corporation (in the case of Beit Ras) and by the Ministry of Public Works and Housing for surveys.

Implementation of the strategies outlined in Table 2 was the main activity of the CRM effort over the last two years. Priorities were to coordinate and establish communication links between development agencies and the DAJ, with the goal of making those techniques part of the routine activities of the DAJ. The results of these efforts can be seen in Table 1. The evolution from the past situation (Table 1) to what can be considered the ideal condition (Table 2) is the result of a two-pronged approach which emphasizes the creation of information sources and mechanisms for sharing that information.

The JADIS program is one of the cornerstones of the present CRM project. The ul-

timate goal is to enter into a computerized database coded information about *all* known archaeological sites in Jordan, allowing quick and effective monitoring of sites under threat of destruction. The JADIS program was initiated under the 1989-91 USAID grant. This provided for the design of the system, the development of the database, the design of the cardfile to be used for data entry, and the training of five DAJ employees (now nine) in card compilation and use of the database system. A reference manual was also prepared for both card compilation and software use.⁴

This database system fills a major gap in the management of the DAJ's archives. This computerized inventory can provide a wide range of different site lists (by name, by geographic coordinate, by period of use, by level of preservation, etc.), at a keystroke and within a few minutes. When complete, this database will have met one of the requirements of article 4 of the 1988 Antiquities Law,⁵ and of the 1972 UNESCO convention (articles 29-31) on the Protection of the Cultural and Natural Heritage, e.g. a complete inventory of the known archaeological heritage. It will also ease the process of monitoring areas under construction. By entering any area's coordinates, all of the archaeological sites within those coordinates will be displayed, greatly reducing the chances of accidental destruction.

The JADIS database will thus allow DAJ officials and local inspectors to effectively monitor archaeological sites in areas under

4. The software was prepared, under specifications designed by Dr. Gaetano Palumbo, by Linda Faris and Nadine Mushahwar of CDG Management and Associates, Amman. The software is distributed by CDG Management and Associates, P. O. Box 925740, Amman. The JADIS program is directed by Khawla Qussous at the Registration Section of DAJ and conducted by Ahmed Ajaj, Wafa Assaf, Hanan Azar, Qamar Fakhoury, Samar el-Hababbeh, Salam Hajjawi, Sahar Nsour, Fadwa Shamaileh, Ahmed el-Shami, and Jihad

Shobaki. JADIS is presented in detail in Palumbo 1993.

5. Article 4 of the 1988 Antiquities Law: The Minister may, upon the recommendation of the Director, and in cooperation with the Department of Lands and Survey, decide on the names and boundaries of archaeological sites, which are to be registered in the archaeological register for immovable antiquities, including the limitation of servitudes pertaining thereto.

Table 1: Evolution of coordination during the CRM Project.

EVOLUTION OF COORDINATION DURING THE CRM PROJECT

PHASES:	PAST:	PRESENT:	IN PROGRESS:
DESIGN	No consideration of possible damages to cultural resources. No rescue work by DAJ	CRM requests information on new projects, releases preliminary impact reports.	Development agency and DAJ exchange information about new projects. The DAJ releases preliminary impact reports.
FEASIBILITY STUDY	No consideration of possible damage to cultural resources. No rescue work by DAJ.	CRM negotiates changes to the project (if needed), releases final impact reports.	DAJ conducts intensive survey. Development agency and CRM/DAJ coordinate mitigation plans on the basis of final impact reports. Rescue excavations are conducted, if feasible.
TENDER BIDDING	No consideration of possible damage to cultural resources. No rescue work by DAJ	CRM negotiates provisional sums for rescue work. CRM requests the addition into the construction contract of recommendations for the protection of cultural heritage	Development agency provides for sums for rescue excavations on the basis of CRM/DAJ report. Recommendations for the protection of cultural heritage are included in the construction contracts.
CONSTRUCTION	No consideration of possible damage to cultural resources. Intervention by DAJ requested only when remains are found. Salvage work by DAJ	DAJ conducts rescue excavations. Salvage excavations still needed. CRM coordinates information flow among contractor, development agency, and DAJ.	DAJ conducts rescue excavations. No need for salvage excavations during major construction projects. CRM/DAJ, contractor, and development agencies exchange information on work progress.

Table 2: Phases of intervention.

PHASES OF INTERVENTION:	
Phases:	Coordination measures:
DESIGN	<ol style="list-style-type: none"> 1. The development agency transmits information on the new project to the DAJ/CRM office. 2. The DAJ/CRM office prepares a preliminary Cultural Resources Impact Assessment to be included in the Environmental Impact Report.
FEASIBILITY STUDY	<ol style="list-style-type: none"> 1. The development agency adjusts the project design according to the suggestions of the DAJ, if feasible. 2. DAJ conducts intensive surveys to determine the existence and assess the importance of archaeological and/or historic sites. 3. The DAJ/CRM office prepares the final Cultural Resources Impact Assessment, which includes a request for a provisional sum for archaeological rescue work (if needed). 4. The DAJ conducts rescue excavations at sites which cannot be avoided by construction. The development agency contributes to the two phases of the rescue project with a provisional sum out of the feasibility or the construction budget.
TENDER BIDDING	<ol style="list-style-type: none"> 1. The DAJ/CRM office issues a set of recommendations for the protection of archaeological remains, to be included into the construction contract. 2. A provisional sum for both the rescue and survey excavation phases is included into the construction contract, if such a sum has not been already provided in the design and feasibility study budgets.
CONSTRUCTION	<ol style="list-style-type: none"> 1. The contractor and the DAJ/CRM coordinate work schedules to avoid overlaps and delays. 2. The DAJ conducts the rescue excavations as agreed with the parties. 3. The contractor follows the recommendations included in the construction contract by the DAJ/CRM office. 4. Continuing coordination between the development agency, the contractor, and the DAJ/CRM office guarantees proper consideration and protection of cultural heritage sites found in the vicinity of the construction area.

development. In the meantime, protection is ensured on a case-by-case basis through early coordination between the various development agencies and the CRM team.

Table 1 shows the evolution of the process of information sharing during the history of CRM in Jordan. It must be stressed that the step between the "present" and the "in progress" phases will require adequate legislation, which may soon be provided by the new Environmental Law.

The creation of a network of liaison officers and the basic information sharing pro-

cess advocated by CRM personnel are not sufficient to meet the needs of an integrated system in which *all* governmental departments are obliged to exchange information and obtain DAJ release permits before construction. The CRM project contributed to the development of a standard system of information sharing and to the study of appropriate modifications of existing laws. The latest results of this coordination effort are the *memoranda* of coordination between DAJ and various development agencies. These *memoranda* set the principles of co-

ordination as well as the steps to be taken every time a new public construction project is initiated. Since they outline procedures which have been experimented and agreed upon, they are the most effective basis for a CRM approach managed exclusively by DAJ.

Finally, a major step forward in disseminating knowledge of CRM techniques and procedures was the organization of a CRM conference in September 1992. During the week-long seminar the CRM team, DAJ and governmental officers, academic personnel, and CRM experts from the U.S.⁶ shared their opinions on the importance of policies of site protection and preservation, on possible ways to improve coordination, and on the possibility of implementing educational programs on the protection of cultural heritage at school and university levels. The conference ended with a document prepared by the participants calling for, among other recommendations, a permanent national commission for the preservation of cultural heritage with the aim of drafting a National Master Plan for the protection of cultural heritage, a fundraising campaign to create a center for conservation, and a sustainable development of rural contexts and urban historic centers. The participation of the public plus the media coverage of the conference showed that there is an interest among public opinion in matters related to the protection of cultural heritage. It is now important to keep this interest high and to maximize and promote the momentum created by the conference.

4. Prospects

Some of the continuing problems faced by the CRM project include the following:

1. The pace of development and construction —and thus the need for salvaging
2. Much private construction is being done without awareness of possible damage to archaeological heritage and without any control by the proper authorities.
3. The Jordanian public is still largely unaware of the value of their own archaeological and historic heritage.
4. The lack of coordination between development agencies and DAJ persists, even if committed liaison officers are working overtime to ensure the proper flow of information.
5. Procedures and practices are not consistent in all government departments. This causes an extra effort in finding the "right channel" for exchanging information.
6. Last-minute changes to project designs can render useless previous coordination efforts, and force DAJ into a "salvage" situation.
7. The Antiquities Law is not always enforced and needs some adjustment (Palumbo 1992b).
8. The DAJ does not have enough financial support to ensure proper restoration and management of archaeological sites, and does not have enough personnel with specialized training to carry on excavation and restoration projects.

Points 1-3 indicate the need for better and more effective public awareness campaigns which should begin at elementary school level, in order to instill in the new generations the sense of "ancient heritage" and care for the remains of the ancient past. Television and newspaper campaigns may also help in shaping public awareness to be more sensitive to the importance of preserving a common heritage for future generations.

6. Dr. Ricardo Elia (Boston University), Dr. Gene Rogge (Dames & Moore), and Dr. Alan Simmons (University of Reno). The CRM Conference was

sponsored by the United States Information Agency.

Points 4-6 are being addressed by the CRM project with the preparation of bilateral agreements for coordination between the DAJ and various development agencies. These agreements, while taking into consideration the individual procedures of each agency, ensure that steps are taken towards the protection of archaeological heritage during every phase of development projects.

Points 7 and 8 stress the need for strict application of the Antiquities Law, which already provides for the protection of Jordan's heritage. This law needs modification, however: penalties for violation are too low to have any deterrent effect. The level of specialization of DAJ employees should be raised, since excavation and restoration projects are becoming more and more part of the daily routine of DAJ activities.

Recent developments are the best indicators of the success of the CRM approach. International granting agencies now require environmental impact assessments (including the cultural resources component) to be prepared in advance of funding, and they very often provide funding for such studies to be conducted. With a CRM approach in place, the DAJ will be able to effectively respond to requests from development agencies to provide such assessments. There is also an increased awareness in the planning and development sector about the importance of cultural heritage preservation. Project officers no longer need explanations of what CRM is, and they often take the initiative to contact the CRM office or other offices at the DAJ in order to give information about new projects being implemented.

It is clear, however, that CRM will certainly not be successful without commitment and constant attention on the part of DAJ and its employees. Just as surely, neither will CRM work without proper standardization of its procedures for liaison and

coordination with other agencies and departments.

5. Efforts Towards the Implementation of a CRM Policy

The following section illustrates the level of cooperation attained under the current program, but it also reflects the need to further improve coordination by means of more formal procedures.

Design Phase: Design phase intervention is an important element of the CRM strategy because it minimizes the necessity for rescue or salvage archaeology. Design phase planning involves producing detailed studies of new projects and the examination of alternative locations. Whether conducted directly by the CRM program, or coordinated by CRM and conducted by the DAJ or by the universities, preliminary surveys and excavations are critical to the establishment of a pattern of pre-development cultural resource management and to demonstrate the importance of early coordination in order to avoid both damage to cultural resources and costly delays to construction projects. The preparation of Cultural Resource Impact Assessments (CRIAs) also creates a model for future activities involving pre-development procedures. The standardization of these reports will be of great help, as a cultural resource component will have to be included in Environmental Impact Reports (EIRs) required prior to construction, as mandated by the forthcoming Environmental Law. To be effective this process has to be initiated at the earliest possible opportunity in all new construction projects.

Feasibility Study Phase: While it is always preferable to start coordination at the design phase, it is still possible to limit damage to cultural resources by intervening at the Feasibility Study level. During this phase, as outlined in Table 1, CRM personnel now either negotiate changes to pro-

jects, where feasible, or release final Cultural Resource Impact Assessments to be used as a basis to negotiate provisional sums for rescue work.

Tender Bidding Phase: Awareness of sites endangered by a construction project at this late phase compels the DAJ to organize emergency surveys or excavations. A project at this stage of development can be modified only at a great cost, and often results in construction delays. Theoretically, it is still possible to negotiate provisional sums for rescue archaeological work, but this possibility is remote.

CRM personnel were able to successfully negotiate provisional sums for several projects (such as the Irbid-North Shuneh road project, the Beit Ras Housing project, and the Ras an-Naqab-Aqaba highway project, to mention only a few), all of which were followed closely from the design phase. This shows that only coordination at the earliest stage of a project guarantees that funds will be provided to the DAJ for any work that might be necessary thereafter.

Construction Phase: Two types of intervention can occur at this phase: (1) rescue, based on planned activities resulting from early coordination with the development agencies, and (2) emergency excavations.

Rescue excavations (planned interventions): These have been conducted by the DAJ and Yarmouk University with provisional sums negotiated by the CRM team in the *Tender Bidding* phase of each project. The CRM team also provides coordination to avoid conflicts between the contractors and the archaeologists.

Emergency excavations (unplanned interventions): Emergency excavations have normally been the only possibility open to the DAJ to save what was left of an archaeological site damaged during construction. The creation of coordination procedures by the CRM project has as its principal aim the

avoidance of unplanned interventions at the construction phase. The emergency excavation of the Roman fort on the Irbid-Jarash road, described above, can only be considered a "hold-over" from past procedures. On the other hand the "sacrifice" of this impressive monument and the desperate efforts to complete the excavation, as well as the costs and delays caused by the operation, made an impression on the development agencies. This may have resulted in an awareness of the necessity for planning at the earliest phases of project design.

6. Recommendations and Perspectives

It is clear that much still needs to be done to ensure proper application and follow-up of CRM techniques and procedures. The following are suggestions arising from the points discussed above:

CRM Office: A permanent CRM office (already operating in the Department of Antiquities Conservation Centre) should have full-time staff consisting of a senior supervisor, two or three archaeologists, one architect/urban planner, one civil engineer, one draftsman, and one computer specialist and JADIS supervisor. Only with a permanent team will the CRM office ensure proper follow-up and coordination with other agencies and with other sections of the DAJ.

Jordan Antiquities Database and Information System (JADIS): A further step in the completion of JADIS is the precise positioning of each catalogued site using Global Positioning System (GPS) technology. This technology, now available at an affordable price, is based on a network of fixed-orbit satellites which transmit information to portable receivers on the geographic location of points on the Earth's surface. Under the present grant, ACOR will use its equipment to provide training for DAJ personnel for using GPS in the field, and to conduct site mapping.

GIS (Geographic Information System):

Such a program may be soon required in order to take full advantage of the capabilities and the information contained in JADIS. With a GIS, it will be possible to trace alignments of new roads, and find immediately which sites will be affected by construction. It will be possible to know which sites are endangered by erosional processes, or, on the basis of forecast of expansion of urban areas, to know which sites will be endangered by new construction in the future. The integration of JADIS with a GIS system will be a powerful tool for the immediate identification of possible critical areas needing intervention, as well as for planning future rescue activities and setting up priorities of heritage conservation and preservation. GIS will easily lead to the creation of a "risk map" containing all the information for future construction work and for forecasting the expansion of urban and agricultural areas in the country. This "risk map" may be the best tool available to the DAJ for the management of the archaeological heritage, and may constitute the basis for its policy of site protection and preservation in the coming years. Finally, the integration of the JADIS database system into the network of already existing GIS applications in Jordan (Royal Geographic Centre, Department of Lands and Survey, Natural Resources Authority) will contribute to the ability of those departments to positively foster cultural environment preservation.

Pre-development Salvage Survey and/or Excavation: More DAJ archaeologists must be trained in CRM techniques in order to develop within the DAJ a network of experts in this field. This will meet the growing need for follow-up required by the large number of construction projects across the country, and the need for the DAJ to issue accurate Cultural Resources Impact Assessments, as already required for projects financed by agencies such as the World Bank and USAID. The ability of the DAJ to is-

sue Cultural Resources Impact Assessments will soon become crucial if the new Environmental Law requires such reports, as now seems likely. This training might start as early as at university level, in order to create a potential group of CRM-trained personnel even before they join the DAJ.

Concerning the protection of archaeological and historic sites from unnecessary destruction, the activity of the CRM office cannot be limited to the preparation of Cultural Resources Impact Assessments. Archaeological rescue work will be conducted by or in coordination with the CRM office, but should be limited to intensive surveys: in general the aim should be the avoidance of archaeological sites by new construction projects. Rescue excavations, executed before construction, should be reduced to a minimum, and only for those sites which cannot be saved. For this reason it is important that new projects be followed from their earliest phases of planning.

Architectural Conservation: Enhancement of the conservation section of DAJ by creating an Architectural Conservation section formed exclusively by professional staff trained in the techniques of archaeological and architectural restoration and conservation, according to Venice Charter regulations. The Architectural Conservation section should also monitor the state of preservation of monuments and advise the DAJ Director General on conservation priorities and the need for urgent interventions.

Public Awareness: Enhancement of the public awareness section of DAJ. Public awareness and educational programs are of extreme importance, and the DAJ has already produced a number of initiatives, but more efforts and more funding should be directed toward this effect, and more personnel should be assigned. Ideally, the employees should be engaged full-time in activities such as lectures at schools, organization of conferences, video produc-

tions, media outreach, and so on.

Archaeological Survey of Jordan: DAJ could organize and manage intensive archaeological surveys for each of the new 1:25,000 maps (series K737) now being published by the Royal Jordanian Geographic Centre. The *Archaeological Survey of Jordan* will set the priority list for complete map surveys and partial surveys around cities and towns. New survey projects organized by Jordanian and international teams will have to coordinate with the *Archaeological Survey of Jordan* in order to avoid duplication of work, and to obtain the approval of proposed survey projects. The survey results should be shared by the Jordanian or international team in order to proceed with the publication of the maps. Technical problems have to be solved in order to organize teams which will spend much of their time in the field recording new sites. Grants might be available from international organizations such as UNESCO once the characteristics and the program of the *Archaeological Survey of Jordan* have been defined.

National Register of Cultural Heritage Sites: Such a register should record information about all sites and monuments needing total preservation. Information should also include their legal status and boundaries. No construction or modification of existing structures should occur within the boundaries or in the vicinity of sites included in the register. A commission might be created to decide the eligibility of sites for the register. The commission could decide if a request for inclusion presented by archaeologists, architects, or private citizens meets the requirements for including the

site or the monument in the register.

Permanent National Commission for the Preservation of Cultural Heritage: This Commission, called for in the final resolutions of the First Conference on Cultural Resource Management in Jordan, should be formed as soon as possible in order to initiate a plan for the protection and conservation of Jordan's cultural heritage. The Commission would set priorities and regulations that the DAJ might adopt as part of its policy of heritage management, especially in the field of organization of restoration projects, field work, permit release to foreign missions, legislation, public awareness, coordination with public and private development agencies, and cooperation with universities and foreign scientific institutes.

In conclusion, the CRM project has served and is still serving as a magnet for a series of activities which were already being conducted at the DAJ, but without real coordination. The results are encouraging, but these recommendations show that much still needs to be accomplished in heritage management in order for the DAJ to contribute intensively to the feasible and organic development of Jordanian society.

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