

WORLD HERITAGE SITES - PHOTOGRAMMETRIC RECORDS

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The value of photogrammetric recording of World Heritage Sites was recognised with the adoption in 1987 of a resolution by ICOMOS. This resolution proposed that all World Heritage Sites should be photogrammetrically recorded. The paper discusses this and shows examples of the application of photogrammetry to typical World Heritage Sites.

INTRODUCTION - WORLD HERITAGE SITES

A major initiative taken by the UNESCO organisation in the heritage field has been the creation of the list of World Heritage Sites. There are now some 350 such sites recognised. These relate not only to historic monuments and sites, but to natural phenomena as well. Examples are the Pyramids in Egypt, the site of Abu Simbel also in Egypt, the Chateau of Chambord on the Loire in France and Fountains Abbey in North Yorkshire, United Kingdom.

In compiling the list of World Heritage Sites, UNESCO has been aided by ICOMOS (International Committee for Monuments and Sites), and IUCN (World Alliance for Nature). The programme was established in 1972 and these sites are considered to be the most important cultural and natural properties in the world.

The principles on which ICOMOS is founded are largely encompassed in a document known as the Venice Charter (ICOMOS, 1964). The correct title of this document is 'The International Charter for the Conservation and Restoration of Monuments and Sites'. Article Nine of the Charter includes the statement that "The restoration in any case must be preceded and followed by an archaeological and historical study of the monument". Clearly, to carry through such a policy requires considerable primary record and measured survey.

While their physical protection is clearly of the first importance, recording and documentation of the sites is thus also seen to be very important. As has been indicated from the examples, the sites contain many forms of built structure and natural phenomena. Therefore a multitude of different techniques of recording and analysis will clearly be required.

PHOTOGRAMMETRY AND THE ROLE OF CIPA

CIPA (International Committee for Architectural Photogrammetry) is a specialised sub committee of ICOMOS and the ISPRS. Since its establishment in 1970, it has promoted the use of photogrammetry as a method of recording all forms of monuments and sites. The photogrammetric process can be used at various levels. The photography alone can be taken with appropriate metric cameras and control, and this material simply stored in archival form. Often of course, the photography is then used to plot full drawings and architectural detail of features.

The value of the photogrammetric technique of recording historic monuments and sites is of course now well established. A major initiative of CIPA was therefore to have ICOMOS adopt as a matter of policy the principle of the use of photogrammetric techniques in recording World Heritage Sites. Of course, not all aspects of all World Heritage Sites are appropriate for photogrammetric recording, and of course total cover of all sites will take many years to achieve.

However, proposals were put to ICOMOS that photogrammetric recording should be accepted in principle. At the 1987 ICOMOS meeting held in Washington, CIPA were therefore delighted when ICOMOS adopted a resolution that photogrammetric recording techniques be applied for all World Heritage Sites.

The text of the resolution is reproduced in full below:

**8th General Assembly
of the International Council on Monuments and Sites
Washington DC (USA), 10-15 October 1987**

RESOLUTION No 2 CONCERNING PHOTOGRAMMETRIC ARCHIVES

adopted by the General Assembly on 15 October 1987

Considering the menaces to which monuments and sites are continuously subjected, particularly those of time and natural forces,

taking into account the possibilities of scientific documentation and recording offered by the constitution of photogrammetric archives of cultural properties,

the General Assembly,

recommends to all countries who are members of ICOMOS

- a) to constitute photogrammetric archives of their monuments and sites included in the World Heritage List,
- b) to extend, as far as possible, those archives to buildings and sites listed in their national inventories,

- c) to give, in that activity, priority to monuments and sites situated in regions subjected to natural disaster risks, particularly in earthquake zones,
- d) to seek, if necessary, international co-operation for establishing those photogrammetric archives.

The adoption of this policy by ICOMOS is clearly of major importance to CIPA in establishing the principle of recording all such sites in this manner.

Carbonnell in 1989 on behalf of the CIPA Committee carried out a survey to assess how many sites and what level of recording had been achieved. He found that nearly 100 sites had at least partly been photogrammetrically recorded. Many of these of course were photogrammetrically surveyed many years before the adoption of the ICOMOS resolution, for example, such major sites as Abu Simbel in Egypt and Borobudur in Indonesia were recorded in the early 1970s.

While it is very difficult in a short timescale to establish just how many sites have been recorded subsequent to the 1987 resolution, it is known for example that in Spain the national ICOMOS Committee adopted this policy of recording sites, and a number of projects in Spain have been carried out specifically in the light of the resolution.

For many other sites in many other countries, it will however be a more piecemeal process. In the following pages some examples of sites recorded by the photogrammetric method are given.

CONCLUSION

The value of the photogrammetric process for the surveying and recording of monuments and sites has been well proven during the last thirty years.

The adoption by ICOMOS of a policy of recording World Heritage Sites by photogrammetry is of the utmost value for the cultural record of these sites. Also the task of the CIPA Committee and the photogrammetric community in persuading the owners and managers of such sites of the value of the photogrammetric task is made much easier by this official resolution of ICOMOS.

BIBLIOGRAPHY

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The International Charter for the Conservation and Restoration of Monuments and Sites, known as 'The Venice Charter', ICOMOS, 1964.

Carbonnell, M, 'Le Fil des Pierres - Photogrammetrie et conservation des monuments', published by IGN, Paris, October 1978.

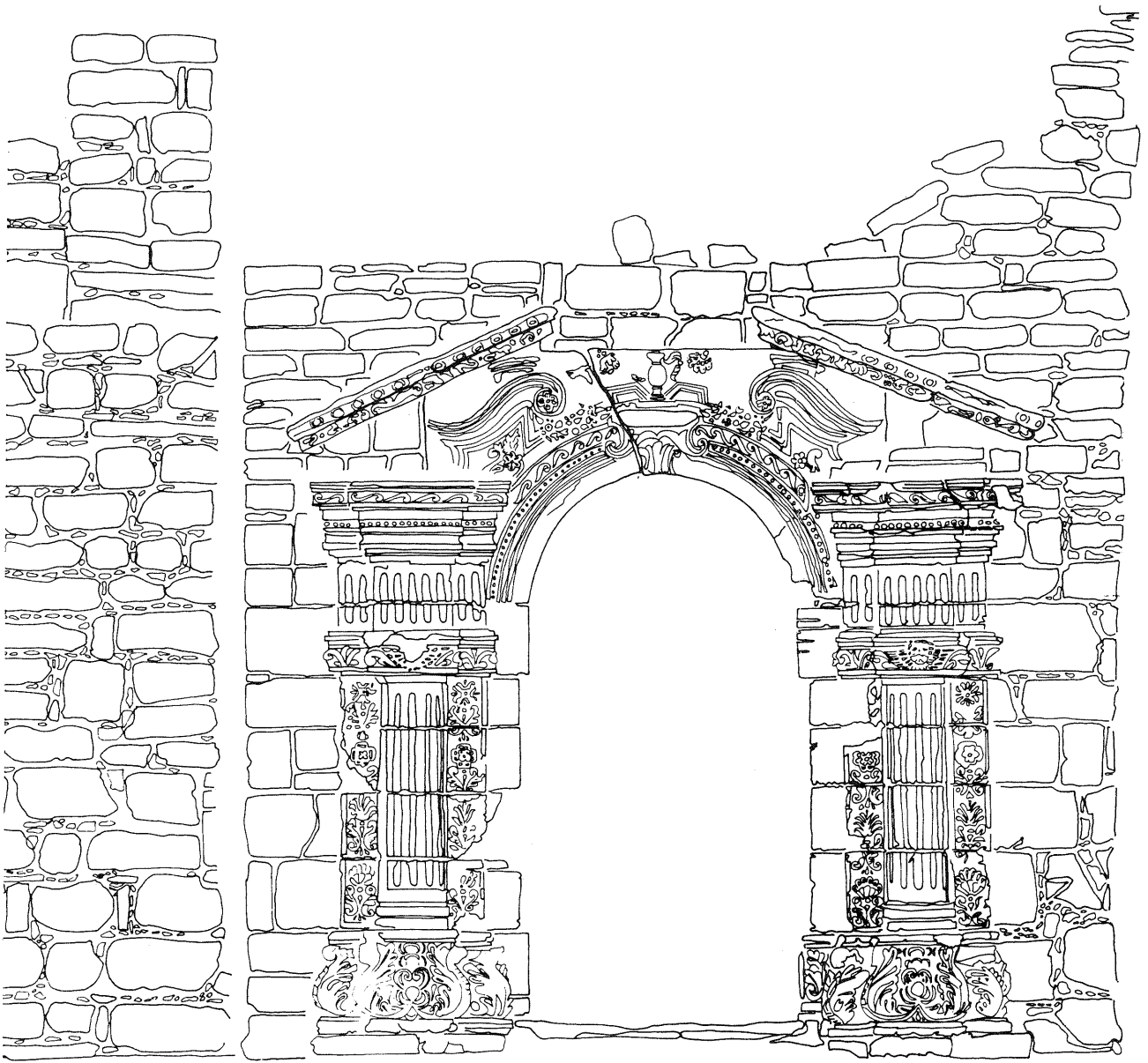
Waldhausl, P, and Butcher, T, 'Evaluation of Photogrammetric Methods for the Documentation of the World's Architectural Heritage', CIPA Symposium, Rome 1989.

LIST OF WORLD HERITAGE SITES COMPLETE AS OF 1991, SHOWING KNOWN PHOTOGRAMMETRIC COVER

Black dots indicate all sites where photogrammetric recording is known to have taken place. It should be noted that this does not imply that complete photogrammetric cover is in existence.

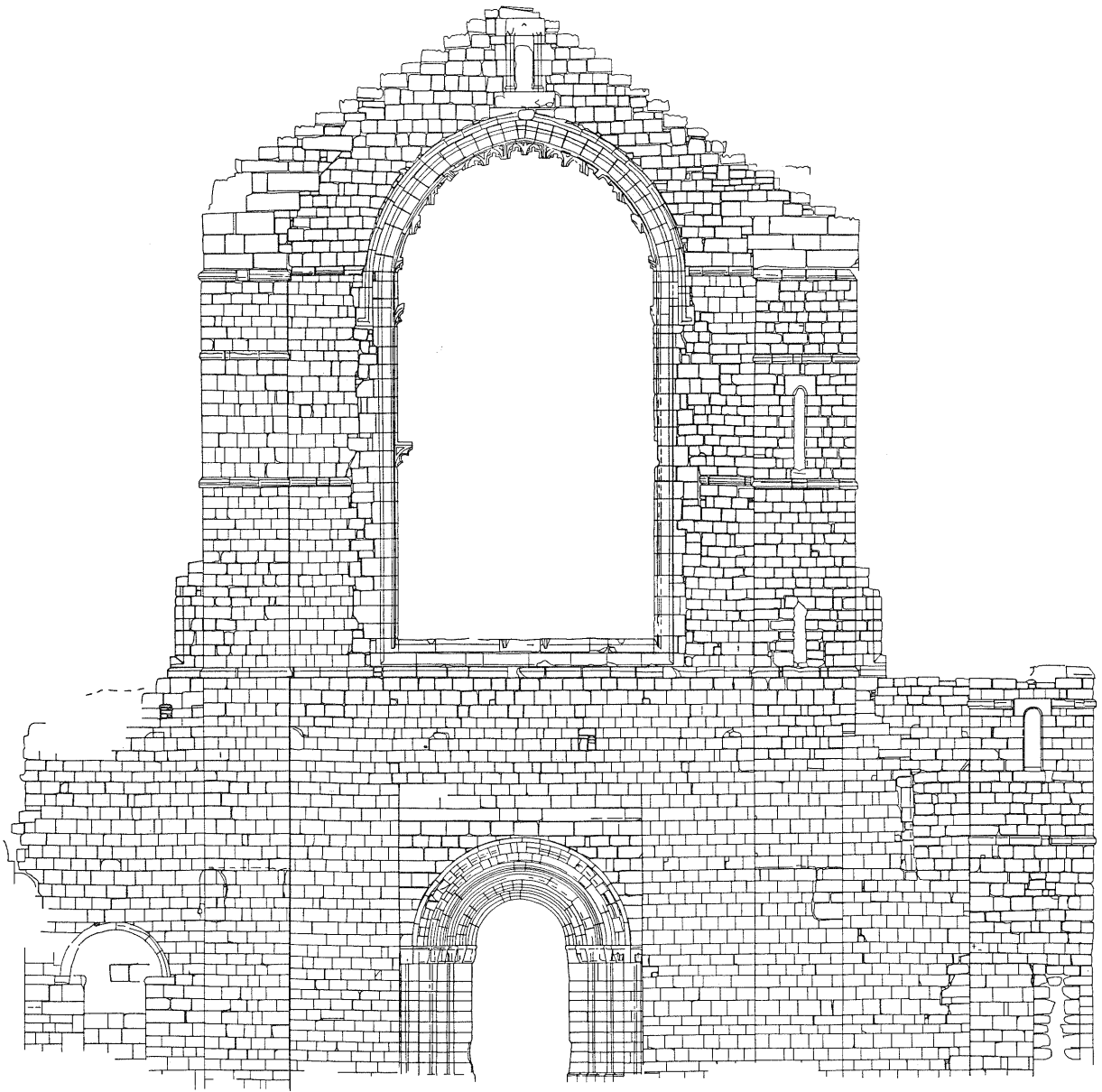
- | | | |
|--|--|---|
| 1 Parc national Nahanni (CAN) ○ | 51 Parc national de Huascarán (PER) ○ | 108 Arc-et-Senans (Saline royale) (FRA) ◇ |
| 2 Parc national de Wood Buffalo (CAN) ○ | 52 Chavin (Site archéologique) (PER) ◇ | • 109 Strasbourg - Grande Ile (FRA) ◇ |
| 3 Parcs des Rocheuses canadiennes (CAN) ○ | 53 Ensemble conventuel de San Francisco de Lima (PER) ◇ | • 110 Eglise de St. Savin-sur-Gartempe (FRA) ◇ |
| 4 Le Précipice à bisons (CAN) ◇ | 54 Machu Picchu (Sanctuaire historique) (PER) ○◇ | • 111 Grottes ornées de la Vézère (FRA) ◇ |
| 5 L'île Anthony (CAN) ◇ | 55 Parc national de Manu (PER) ○ | • 112 Orange (Théâtre antique et arc de triomphe) (FRA) ◇ |
| • 6 L'Anse aux Meadows (Parc historique) (CAN) ◇ | • 56 Cuzco (Vieille ville) (PER) ◇ | 113 Le pont du Gard (FRA) ◇ |
| 7 Parc national du Gros Morne (CAN) ○ | 57 Potosi (Ville minière) (BOL) ◇ | • 114 Arles (Monuments romains et romans) (FRA) ◇ |
| • 8 Parc des Dinosaurés (CAN) ○ | • 58 Olinda (Centre historique) (BRA) ◇ | 115 Angra do Heroísmo (POR) ◇ |
| • 9 Québec (Arrondissement historique) (CAN) ◇ | 59 Brasília (BRA) ◇ | 116 Couvent du Christ à Tomar (POR) ◇ |
| 10 Parcs de Kluane et Wrangell-St. Elias (CAN/USA) ○ | 60 Salvador de Bahia (Centre historique) (BRA) ◇ | 117 Monastère de Batalha (POR) ◇ |
| 11 Parc national Olympique (USA) ○ | 61 Ouro Preto (Ville historique) (BRA) ◇ | • 118 Monastère des Hiéronymites et Tour de Belem (POR) ◇ |
| 12 Parc national Redwood (USA) ○ | 62 Sanctuaire du Bon Jésus à Congonhas (BRA) ◇ | • 119 Evora (Centre historique) (POR) ◇ |
| 13 Parc national Yosemite (USA) ○ | 63 Parc national de l'Iguaçu (BRA) ○ | • 120 Saint-Jacques-de-Compostelle (Vieille ville) (SPA) ◇ |
| 14 Yellowstone (Parc national) (USA) ○ | • 64 Missions jésuites des Guarani (ARG/BRA) ◇ | • 121 La Grotte d'Altamira (SPA) ◇ |
| 15 Grand Canyon du Colorado (USA) ○ | 65 Parc national Los Glaciares (ARG) ○ | 122 Eglises du royaume des Asturies (SPA) ◇ |
| 16 Mesa Verde (Parc national) (USA) ◇ | 66 Parc national de l'Iguaçu (ARG) ○ | 123 Parc et palais Güell et Casa Milà à Barcelone (SPA) ◇ |
| 17 Parc national historique de Chaco (USA) ◇ | 67 Sites rupestres d'Alta (NOR) ◇ | • 124 Cathédrale de Burgos (SPA) ◇ |
| 18 Site des Cahokia Mounds (USA) ◇ | 68 Le quartier de Bryggen à Bergen (NOR) ◇ | 125 Salamanque (Vieille ville) (SPA) ◇ |
| 19 Parc national de Mammoth Cave (USA) ○ | • 69 Røros (Cité minière) (NOR) ◇ | 126 Ségovie (La vieille ville et son aqueduc) (SPA) ◇ |
| 20 La Statue de la Liberté (USA) ◇ | • 70 L'église de bois d'Urnes (NOR) ◇ | 127 Avila (La vieille ville, ses remparts et ses églises extra-muros) (SPA) ◇ |
| 21 Independence Hall (USA) ◇ | • 71 Lübeck (Ville hanséatique) (GER) ◇ | • 128 L'Escorial (Monastère et site) (SPA) ◇ |
| 22 Monticello et Université de Virginie (USA) ◇ | • 72 Cathédrale d'Aix-la-Chapelle (GER) ◇ | • 129 Teruel (Architecture mudéjare) (SPA) ◇ |
| 23 Parc national des Great Smoky Mountains (USA) ○ | 73 Cathédrale de Spire (GER) ◇ | 130 Tolède (Ville historique) (SPA) ◇ |
| 24 Parc national des Everglades (USA) ○ | 74 Eglise de pèlerinage de Wies (GER) ◇ | • 131 Cáceres (Vieille ville) (SPA) ◇ |
| 25 Porto Rico (Forteresse et Site historique de San Juan) (USA) ◇ | 75 La Résidence de Würzburg (GER) ◇ | • 132 La Mosquée de Cordoue (SPA) ◇ |
| 26 Parc national des Volcans de Hawaï (USA) ○ | • 76 Brühl (Châteaux d'Augustsburg et de Falkenlust) (GER) ^ | • 133 L'Alhambra et le Generalife à Grenade (SPA) ◇ |
| 27 La Havane (Vieille ville et fortifications) (CUB) ◇ | 77 Trèves (Monuments romains, Cathédrale et Eglise de Notre Dame) (GER) ◇ | • 134 Séville (Cathédrale, Alcazar et Archivo de Indias) (SPA) ◇ |
| 28 Trinidad et la Vallée de los Ingenios (CUB) ◇ | • 78 Cathédrale Sainte-Marie et Eglise Saint-Michel d'Hildesheim (GER) ◇ | 135 Parc national Garajonay (Iles Canaries) (SPA) ○ |
| 29 Citadelle, Sans-Souci et Ramiers (Parc historique) (HAï) ◇ | 79 Parc national de Białowieża (POL) ○ | • 136 Berne (Vieille ville) (SWI) ◇ |
| • 30 Mexico (Centre historique et Xochimilco) (MEX) ◇ | 80 Camp de concentration d'Auschwitz (POL) ◇ | • 137 Couvent de St. Gall (SWI) ◇ |
| 31 Téotihuacan (Cité pré-hispanique) (MEX) ◇ | • 81 Cracovie (Centre historique) (POL) ◇ | 138 Couvent bénédictin de Münstair (SWI) ◇ |
| • 32 Puebla (Centre historique) (MEX) ◇ | • 82 Varsovie (Centre historique) (POL) ◇ | 139 Art rupestre du Val Camonica (ITA) ◇ |
| • 33 Oaxaca (Zone historique) et Monte Alban (Cité pré-hispanique) (MEX) ◇ | 83 La Mine de sel de Wieliczka (POL) ◇ | • 140 Venise et sa lagune (ITA) ◇ |
| 34 Palenque (Cité pré-hispanique et parc national) (MEX) ◇ | 84 Ile de St. Kilda (UK) ○ | • 141 Santa Maria delle Grazie avec "La Cène" de Léonard de Vinci (ITA) ◇ |
| 35 Sian Ka'an (Réserve de la biosphère) (MEX) ○ | 85 La Chaussée des Géants et sa côte (UK) ◇ | • 142 Florence (Centre historique) (ITA) ◇ |
| 36 Chichén Itzá (Ville pré-hispanique) (MEX) ◇ | • 86 Le Mur d'Hadrien (UK) ◇ | • 143 Pise (Piazza del Duomo) (ITA) ◇ |
| • 37 Guanajuato (Ville historique et mines adjacentes) (MEX) ◇ | 87 Durham (Cathédrale et château) (UK) ◇ | • 144 Rome (Centre historique) (ITA) ◇ |
| • 38 Antigua Guatemala (GUA) ◇ | • 88 Parc de Studley Royal et ruines de l'abbaye de Fountains (UK) ◇ | • 145 La Cité du Vatican (HLS) ◇ |
| 39 Quirigua (Parc archéologique et ruines) (GUA) ◇ | 89 Châteaux et enceintes du Roi Edouard en Gwynedd (UK) ◇ | 146 Parc national du Durmitor (YUG) ○ |
| 40 Tikal (Parc national) (GUA) ○◇ | • 90 Gorge d'Ironbridge (UK) ◇ | 147 Grottes de Skocjan (YUG) ○ |
| 41 Ruines maya de Copan (HON) ◇ | 91 Palais de Blenheim (UK) ◇ | 148 Lacs de Plitvice (Parc national) (YUG) ○ |
| 42 Réserve de la biosphère de Rio Platano (HON) ○ | 92 Ville de Bath (UK) ◇ | • 149 Dubrovnik (Vieille ville) (YUG) ◇ |
| 43 Réserves de Talamanca et La Amistad (COS) ○ | • 93 Westminster (Palais et Abbaye) et Eglise Sainte Marguerite (UK) ◇ | 150 Monastère de Studenica (YUG) ◇ |
| 44 Parc national du Darien (PAN) ○ | • 94 Tour de Londres (UK) ◇ | 151 Le Vieux Ras et Sopocani (YUG) ◇ |
| 45 Fortifications de Portobello et San Lorenzo (PAN) ◇ | • 95 Cathédrale, Abbaye Saint-Agustin et Eglise Saint-Martin à Cantorbéry (UK) ◇ | • 152 Split (Centre historique avec Palais de Dioclétien) (YUG) ◇ |
| 46 Carthagène (Port, forteresse et monuments) (COL) ◇ | • 96 Stonehenge, Avebury et sites mégalithiques associés (UK) ◇ | • 153 Kotor et ses bouches (YUG) ○◇ |
| 47 Les Iles Galapagos (Parc national) (ECU) ○ | 97 Ile d'Henderson (UK) ○ | • 154 Ohrid et son lac (YUG) ○◇ |
| 48 Parc national Sangay (ECU) ○ | 98 Golfe de Girolata et de Porto et Réserve de Scandola (FRA) ○ | • 155 Budapest (Panorama du Danube et quartier du Château de Buda) (HUN) ◇ |
| 49 Quito (Vieille ville) (ECU) ◇ | • 99 Cathédrale d'Amiens (FRA) ◇ | • 156 Hollóko (Village traditionnel) (HUN) ◇ |
| 50 Chan-Chan (Zone archéologique) (PER) ◇ | 100 Versailles (Palais et parc) (FRA) ◇ | 157 Delphes (Site archéologique) (GRE) ◇ |
| | • 101 Le Mont St. Michel et sa baie (FRA) ○◇ | 158 Epidaure (Site archéologique) (GRE) ◇ |
| | • 102 Cathédrale de Chartres (FRA) ◇ | 159 Mont Athos (GRE) ○◇ |
| | 103 Fontainebleau (Palais et parc) (FRA) ◇ | • 160 Thessalonique (Monuments paléochrétiens et byzantins) (GRE) ◇ |
| | 104 Places de Nancy (Stanislas, Carrière et Alliance) (FRA) ◇ | • 161 L'Acropole d'Athènes (GRE) ◇ |
| | • 105 Chambord (Château et domaine) (FRA) ◇ | 162 Rhodes (Ville médiévale) (GRE) ◇ |
| | • 106 Vézelay (Basilique et colline) (FRA) ◇ | 163 Météores (GRE) ○◇ |
| | 107 Abbaye cistercienne de Fontenay (FRA) ◇ | • 164 Temple d'Apollon Epikourios à Bassae (GRE) ◇ |
| | | 165 Réserve naturelle de Srebarna (BUL) ○ |
| | | • 166 Tombeau thrace de Svechtari (BUL) ◇ |
| | | • 167 Eglises rupestres d'Ivanovo (BUL) ◇ |
| | | • 168 Le cavalier de Madara (BUL) ◇ |

- 169 Nessebar (Vieille ville) (BUL) ◊
- 170 Eglise de Boyana (BUL) ◊
- 171 Monastère de Rila (BUL) ◊
- 172 Tombeau thrace de Kazanlak (BUL) ◊
- 173 Parc national de Pirin (BUL) ○
- 174 Istanbul (Zones historiques) (TUR) ◊
- 175 Hiérapolis-Pamukkale (TUR) ○◊
- 176 Hattousa (Ville hittite) (TUR) ◊
- 177 Parc national de Göreme et sites rupestres de Cappadoce (TUR) ○◊
- 178 Grande mosquée et hôpital de Divrigi (TUR) ◊
- 179 Nemrut Dag (Site archéologique) (TUR) ◊
- 180 Xanthos-Letdon (TUR) ◊
- 181 Paphos (Site archéologique) (CYP) ◊
- 182 Eglises peintes de la région de Troodos (CYP) ◊
- 183 La Valette (Vieille ville) (MAT) ◊
- 184 Hypogée de Hal Saffieni (MAT) ◊
- 185 Temples de Ggantija (MAT) ◊
- 186 La Médina de Fez (MOR) ◊
- 187 La Médina de Marrakech (MOR) ◊
- 188 Aït-Ben-Haddou (Ville fortifiée) (MOR) ◊
- 189 Djémila (Ruines romaines) (ALG) ◊
- 190 La Kalâa des Beni Hammad (ALG) ◊
- 191 Timgad (Ruines romaines) (ALG) ◊
- 192 Tipasa (Site archéologique) (ALG) ◊
- 193 La Vallée du M'Zab (ALG) ◊
- 194 Le Tassili n'Ajjer (ALG) ○◊
- 195 Parc national de l'Ichkeul (TUN) ○
- 196 L'Amphithéâtre d'El Djem (TUN) ◊
- 197 Kerkouane (Ville punique et sa nécropole) (TUN) ◊
- 198 Carthage (Site archéologique) (TUN) ◊
- 199 La Médina de Tunis (TUN) ◊
- 200 La Médina de Sousse (TUN) ◊
- 201 Kairouan (TUN) ◊
- 202 Cyrène (Site archéologique) (LIB) ◊
- 203 Leptis Magna (Site archéologique) (LIB) ◊
- 204 Sabratha (Site archéologique) (LIB) ◊
- 205 Ghadames (Vieille ville) (LIB) ◊
- 206 Sites rupestres du Tadrart Acacus (LIB) ◊
- 207 Abou Mena (Ruines chrétiennes) (EGY) ◊
- 208 La Thèbes antique et sa nécropole (EGY) ◊
- 209 Le Caire islamique (EGY) ◊
- 210 Memphis et sa nécropole avec les Pyramides (EGY) ◊
- 211 Les monuments de Nubie d'Abou Simbel à Philae (EGY) ◊
- 212 Villes anciennes de Djenné (MAL) ◊
- 213 Tombouctou (MAL) ◊
- 214 Parc des oiseaux de Djoudj (SEN) ○
- 215 Parc national du Niokolo-Koba (SEN) ○
- 216 L'île de Gorée (SEN) ◊
- 217 Réserves du Mont Nimba (GUI/IVC) ○
- 218 Parc national de la Comoé (IVC) ○
- 219 Parc national de Tai (IVC) ○
- 220 Bâtiments traditionnels Asante (GHA) ◊
- 221 Forts et châteaux du Ghana (GHA) ◊
- 222 Palais royaux d'Abomey (BEN) ◊
- 223 Réserve de faune du Dja (CMR) ○
- 224 Parc national du Manovo-Gounda St. Floris (CAF) ○
- 225 Parc national du Simen (ETH) ○
- 226 Axoum (Site archéologique) (ETH) ◊
- 227 Fasil Ghebbi et monuments de Gondar (ETH) ◊
- 228 Églises rupestres de Lalibela (ETH) ◊
- 229 Tiya (Stèles gravées) (ETH) ◊
- 230 La Basse vallée de l'Aouache (ETH) ◊
- 231 La Basse vallée de l'Omo (ETH) ◊
- 232 Parc national de la Garamba (ZAI) ○
- 233 Parc national du Kahuzi-Biega (ZAI) ○
- 234 Parc national des Virunga (ZAI) ○
- 235 Parc national de la Salonga (ZAI) ○
- 236 Parc national de Serengeti (URT) ○
- 237 Parc national du Kilimandjaro (URT) ○
- 238 Région de Ngorongoro (URT) ○◊
- 239 Réserve de faune de Selous (URT) ○
- 240 Ruines de Kilwa Kisiwani et de Songo Mnara (URT) ◊
- 241 Parc national du Lac Malawi (MLW) ○
- 242 Réserves de Mana Pools, de Sapi et de Chewore (ZIM) ○
- 243 Ruines de Khami (ZIM) ◊
- 244 Ruines du Grand Zimbabwe (ZIM) ◊
- 245 L'Atoll d'Aldabra (SEY) ○
- 246 La Vallée de Mai (Réserve naturelle) (SEY) ○
- 247 Anjar (Site archéologique) (LEB) ◊
- 248 Baalbek (LEB) ◊
- 249 Byblos (LEB) ◊
- 250 Tyr (Site archéologique) (LEB) ◊
- 251 Alep (Vieille ville) (SYR) ◊
- 252 Bosra (Ville antique) (SYR) ◊
- 253 Damas (Vieille ville) (SYR) ◊
- 254 Palmyre (Site archéologique) (SYR) ◊
- 255 Jérusalem (Vieille ville et ses remparts) ◊
- 256 Hatra (Site archéologique) (IRQ) ◊
- 257 Qusair Amra (Ruines et fresques) (JOR) ◊
- 258 Pétra (JOR) ◊
- 259 Sana'a (Vieille ville) (YEM) ◊
- 260 Shibam (Vieille ville et remparts) (PDY) ◊
- 261 Le Fort de Bahla (OMA) ◊
- 262 Bat, Al-Khutim et Al-Ayn (Sites archéologiques) (OMA) ◊
- 263 Ispahan (Meidan Emam) (IRA) ◊
- 264 Persépolis (IRA) ◊
- 265 Tchoghza Zambil (IRA) ◊
- 266 Lahore (Forts et Jardins de Shalimar) (PAK) ◊
- 267 Thatta (Monuments historiques) (PAK) ◊
- 268 Mohenjo Daro (Site archéologique) (PAK) ◊
- 269 Ruines bouddhiques de Takht-i-Bahi (PAK) ◊
- 270 Taxila (Vestiges archéologiques) (PAK) ◊
- 271 Parc national de Sagarmatha (NEP) ○
- 272 La Vallée de Kathmandu (NEP) ◊
- 273 Parc national de Chitwan (NEP) ○
- 274 Parc national de Keoladeo (IND) ○
- 275 Le Fort d'Agra (IND) ◊
- 276 Le Taj Mahal (IND) ◊
- 277 Fatehpur Sikri (Ville moghole) (IND) ◊
- 278 Monuments de Khajuraho (IND) ◊
- 279 Les grottes d'Ellora (IND) ◊
- 280 Les grottes d'Ajanta (IND) ◊
- 281 Les grottes d'Elephanta (IND) ◊
- 282 Goa (Églises et couvents) (IND) ◊
- 283 Les monuments de Pattadakal (IND) ◊
- 284 Monuments de Hampi (IND) ◊
- 285 Le Temple de Brihadisvara à Thanjavur (IND) ◊
- 286 Mahabalipuram (Ensemble de monuments) (IND) ◊
- 287 Le Temple du Soleil à Konarak (IND) ◊
- 288 Parc national des Sundarbans (IND) ○
- 289 Parc national de Kaziranga (IND) ○
- 290 Sanctuaire de faune de Manas (IND) ○
- 291 Parc national de Nanda Devi (IND) ○
- 292 Ruines du Vihara bouddhique de Paharpur (BGD) ◊
- 293 La ville-mosquée historique de Bagerhat (BGD) ◊
- 294 Sigiriya (Ville antique) (SRL) ◊
- 295 Polonnaruwa (Ville antique) (SRL) ◊
- 296 Anuradhapura (Ville sainte) (SRL) ◊
- 297 Réserve forestière de Sinharaja (SRL) ○
- 298 Ville sacrée de Kandhy (SRL) ◊
- 299 Galle (Vieille ville et ses fortifications) (SRL) ◊
- 300 Le Palais impérial des Dynasties Ming et Qing (CPR) ◊
- 301 Le Site de "l'Homme de Pékin" à Zhoukoudian (CPR) ◊
- 302 Le Mont Taishan (CPR) ○◊
- 303 La Grande Muraille (CPR) ◊
- 304 Le Mausolée du Premier Empereur Qin (CPR) ◊
- 305 Les grottes de Mogao (CPR) ◊
- 306 Parc national du Kakadu (AUL) ○◊
- 307 Tropiques humides de Queensland (AUL) ○
- 308 La grande Barrière (AUL) ○
- 309 Forêts tempérées et subtropicales de la côte orientale (AUL) ○
- 310 Les îles Lord Howe (AUL) ○
- 311 Parc national d'Uluru (AUL) ○
- 312 La région des Lacs Willandra (AUL) ○◊
- 313 Parcs nationaux de Tasmanie occidentale (AUL) ○◊
- 314 Te Wahipounamu - Zone sud ouest de la Nouvelle Zélande - (NZE) ○
- 315 Site archéologique d'Olympie (GRE) ◊
- 316 Mystras (GRE) ◊
- 317 Monuments bouddhiques de Sanchi (IND) ◊
- 318 Monastère d'Alcobaça (POR) ◊
- 319 Falaise de Bandiagara (Pays Dogon) (MAL) ○◊
- 320 Parc national du Banc d'Arguin (MAU) ○
- 321 Mosi-oa Tunya/Victoria Falls (ZAM/ZIM) ○
- 322 Châteaux et parcs de Potsdam et de Berlin (GER) ◊
- 323 Huangshan (CPR) ○◊
- 324 Délos (GRE) ◊
- 325 Monastères de Daphni, Hossios Lukas et Néa Moni de Chios (GRE) ◊
- 326 Tsingy de Bemaraha (Réserve naturelle) (MAG) ○
- 327 Tongariro (Parc national) (NZE) ○
- 328 La Amistad (Parc national) (PAN) ○
- 329 Rio Abiseo (Parc national) (PER) ○
- 330 Léningrad (Centre historique et monuments annexes) (USR) ◊
- 331 Kizhi Pogost (USR) ◊
- 332 Itchan Kala (Ville historique) (USR) ◊
- 333 Moscou: Kremlin et Place rouge (USR) ◊
- 334 Missions jésuites des Chiquitos (BOL) ◊
- 335 San Gimignano (Centre historique) (ITA) ◊
- 336 Saint-Domingue (Ville coloniale) (DOM) ◊
- 337 Saint-Sophie et Laure de Kiev-Petchersk (UKR) ○



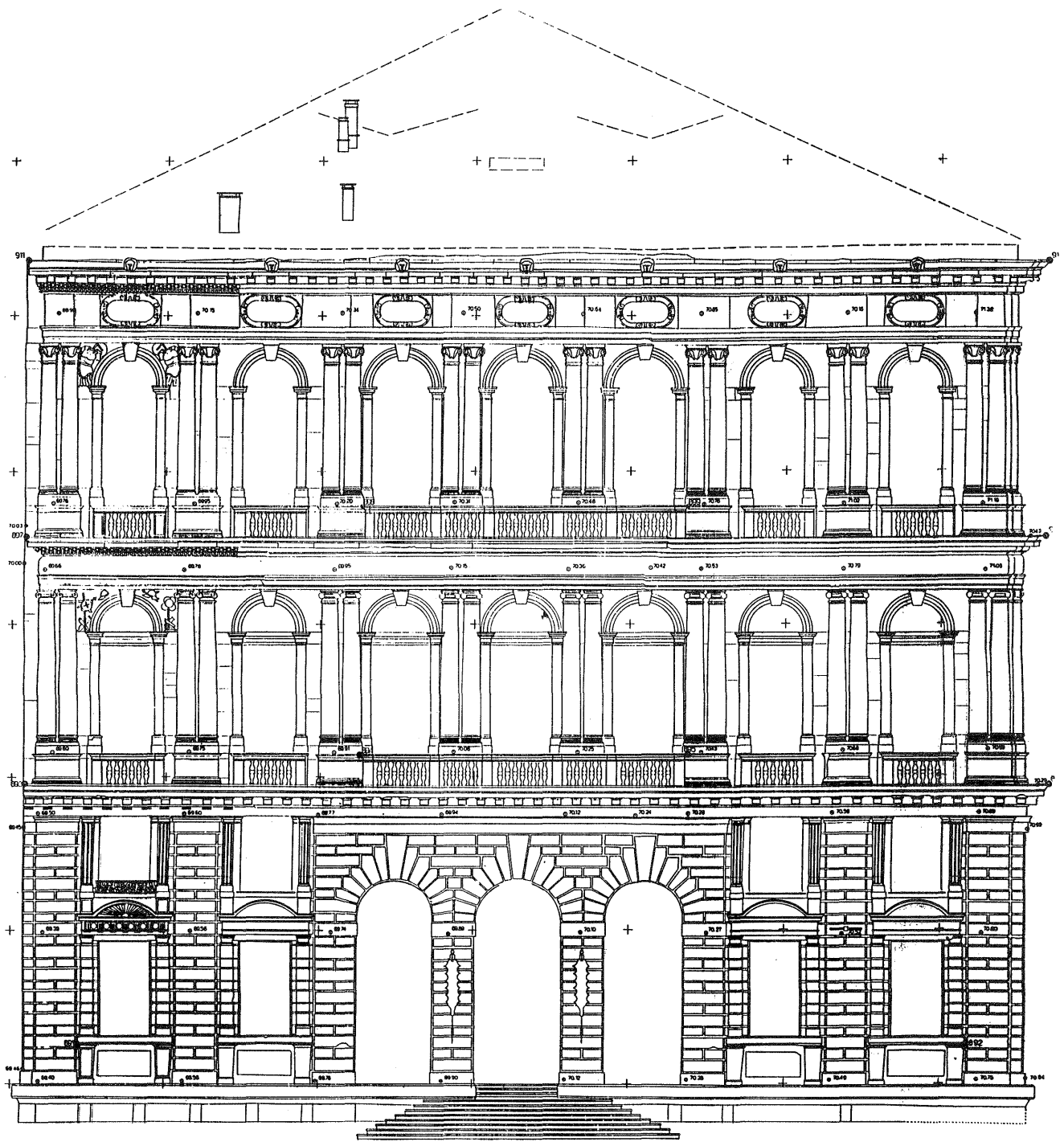
Example 1. The Jesuit Mission of Guaranis in the Argentine and Paraguay.

This major religious site was constructed in the 17th Century. The Regional Centre for Research in Architectural Photogrammetry of the University of La Plata carried out this photogrammetric survey. This application followed the resolution of ICOMOS in 1987. The illustration shows a part of the Mission of St Ignacio in the Argentine. The original drawing was at a scale of 1:20. This work was carried out under the direction of Professor Antonio Cheli.



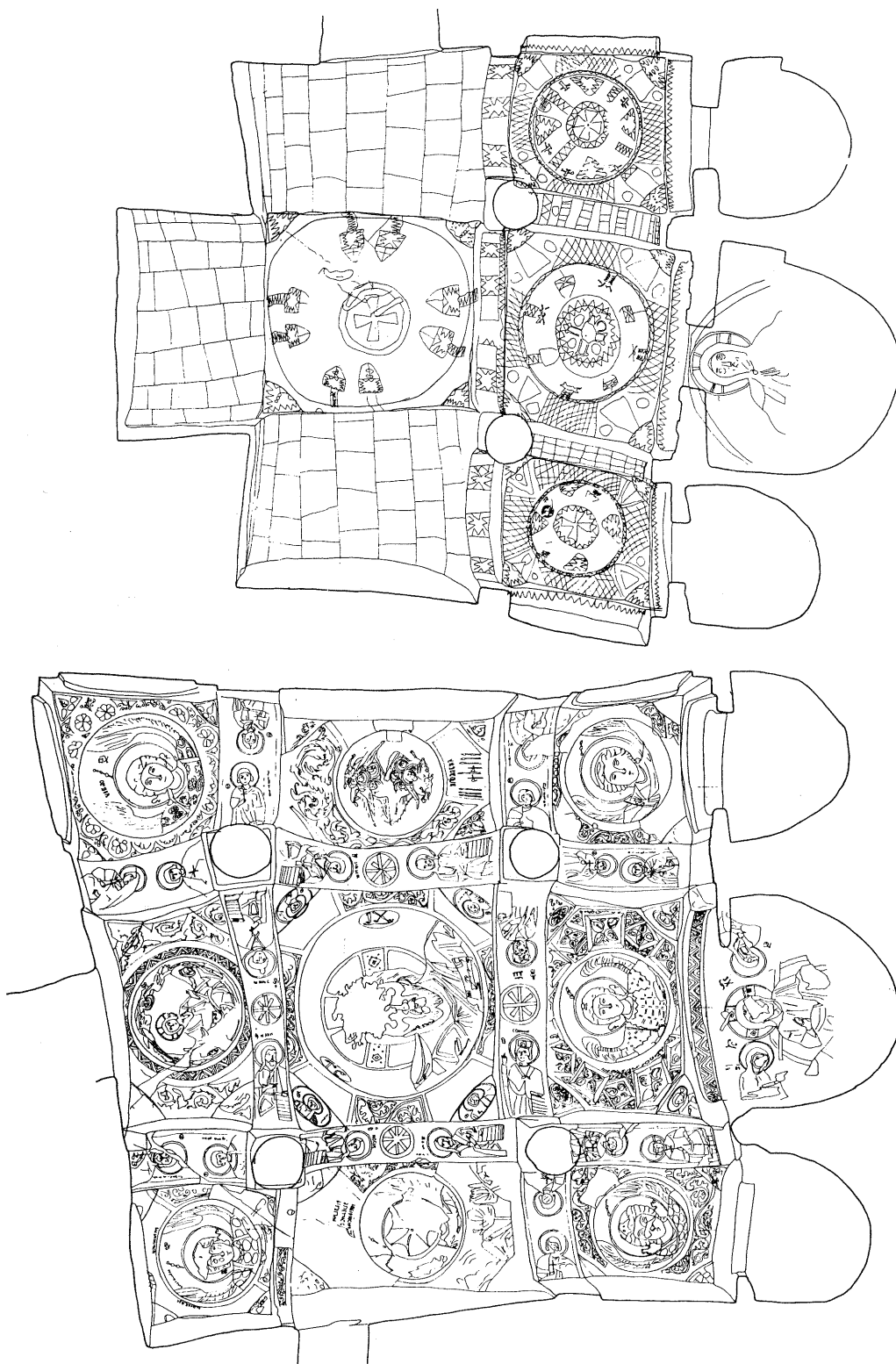
Example 2. Fountains Abbey and Studley Royal Estate - North Yorkshire, United Kingdom.

This drawing shows the West Front of Fountains Abbey on the Studley Royal Estate in North Yorkshire. This major Cistercian Monastery built in phases between the 12th to the 15th Centuries is one of the largest and finest monastic sites in Europe. It is in the care of English Heritage and the National Trust. A programme of documentation and recording has been going on for a number of years. The photogrammetric process is used extensively in this work. The drawing shows the West Front of the main abbey building, original at 1:50 scale, survey by English Heritage, Survey Services - Photogrammetric Unit.



Example 3. The Palazzo Corner Della Ca' Grande, Venice, Italy.

The whole of the city of Venice is a World Heritage Site. The Grand Canal is lined with a wonderful series of palaces, mostly of the 16th, 17th and 18th Centuries. The above photogrammetric drawing shows the facade of the 'Palazzo' facing the Grand Canal. The original drawing was at a scale of 1:50. This work was carried out by the Laboratory of Photogrammetry, the Department of Historical Architecture at the University of Venice, Italy.



Example 4. The Goreme Region, Turkey.

This unique region of Turkey owes its form to the volcanic origin of its rocks. The effect of rain and wind over the centuries have created extraordinarily shaped valleys and other natural features. There are however many important built forms in the region. The above illustrations show parts of the churches of Elmali and St Barbara. These unique churches are hewn out of the natural rock. The illustrations show parts of the ceilings of these two churches, original at 1:20 scale. This work was carried out by the Laboratory of Photogrammetry of the Middle East Technical University, Ankara, Turkey.