

A corpus of early Ionic capitals

by

KAREL ANTHONIE BAKKER

Submitted in fulfilment of part of the requirements for the degree

Philosophiae Doctor (Architecture) in the Faculty of Science
UNIVERSITY OF PRETORIA

SEPTEMBER 1999





ACKNOWLEDGEMENTS

I gratefully acknowledge the contributions of

Prof Dieter Holm, my promotor, a teacher and guide who lives an ecological view and values both the inquisitive and rigorous pursuit of knowledge, and who by example instructs a manner where insight into a totality of historical cultural achievement is integrated in creating the present's future.

Dr Herman Kienast, Assistant Director of the Deutsches Archäologisches Institut Athen, my co-promotor, for the initial guidance, for patiently listening to and answering my many questions, for keeping the study within the realm of the demonstrable; as archaeologist for being a valuable link to the discipline of archaeological revelation and as architect for being an informed and sensible guide to historical works.

The University of Pretoria, my teaching and learning environment, for financial assistance and study leave; Prof Nico Sauer, previous Faculty Dean, for direct support; the library and especially Mrs Sunette Stoffberg for the large investment in my study and for meeting my demands; Prof Schalk le Roux, Head of the Department of Architecture, for promotion of the discipline of Environmental History, for a questioning and learning environment and for space to work; Prof Roger Fisher, colleague, for input in the conceptual phase, for assistance and for being an example of what inquiry means; my colleagues, for time and encouragement; my students, for their valuable questions and encouragement; computer staff Mrs Hildegarde Jacobs and Elise Nagel, and Prof G van Zyl of Statomet.

His Grace Archbishop Amvrosios of Paros and Naxos, for taking an interest in the work relating to Paros and for access to artifacts held by the Church; Father Demetrios of Marpissa for the way in he introduced me to Ag Antonios Kephalos; Father Georgios Visvinis of Pretoria for unselfish and attentive help in connecting me to the Parian community; Costas Mpourdos for accommodation with the Fissilianis on Paros.

The Deutsches Archäologisches Institut Athen, especially Dr Herrmann Kienast, for help in obtaining material and for the pleasant and fruitful visits to Athens. The Deutsches Archäologisches Institut Berlin, especially Dr Anneliese Peschlow, for use of the library and help in obtaining material.

The Staatliche Museen Berlin, the Director Prof Dr Dieter Heilmeyer, and especially Dr Volker Kästner for help in documenting artifacts and for reference material.

The British School at Athens, the Director Dr SE Waywell, as well as all the staff, Ms H Clarke and Ms H Fields, for use of the library and help with gaining access to and permits for certain artifacts.

The National Archaeological Museum, Athens, and especially Dr Nikos Kaltsas, Curator of Sculpture, for permission to document artifacts and Mrs D Kokeri, for help with reference material.

Dr DU Skillardi, Director of the Paros excavation of the Athens Institute of Archaeology, for permission to document and publish certain Parian capitals and for help in their interpretation.

Prof Dieter Holm, for proof reading the entire document.

Joelle Strike, Annette Clavier, Terri Bakker and Prof H Kriel for help with translations.

Prof Karin Skawran for connecting us to Naxos in a special way, and for help in the literature search.

Vera Katterman for providing a congenial base in Berlin.

My parents for their unselfish contributions towards my education.

My wife Terri for love, time, help, support, sharing, patience, space, sacrifice and intellectual camaraderie.

My sons Ruben and Simon, for understanding their father's love of finding out things and for gladly giving time for as long as it takes, and longer.

PAGE NO.



CONTENTS

enclaves.

CHAPTER 1 - INTRODUCTION 1.1 INTRODUCTION 1 1.2 THE IMPORTANCE OF THE STUDY 1 1.3 THE STATEMENT OF THE PROBLEM 1.4 THE MAIN HYPOTHESIS 1.5 THE SUB PROBLEMS 1.6 THE HYPOTHESES 1.7 THE APPROACH 5 **DEFINITION OF TERMS AND ABBREVIATIONS** 1.8 6 1.9 7 **ASSUMPTIONS** 1.10 **DELIMITATIONS** 1.11 REFERENCE SYSTEM AND MEASURE CONVENTION 8 1.12 THE STRUCTURE OF THE STUDY 8 CHAPTER 2 DESCRIPTION AND ORDERING OF RELEVANT ARTIFACTS 2.1 10 INTRODUCTION 2.2 COMPILATION OF A REPRESENTATIVE DATA BASE 11 2.2.1 Organisational comments, remarks and assumptions 11 13 2.3 THE EARLY NON-STANDARD AND STANDARD IONIC CAPITALS 2.3.1 Achieving a representative and ordered data base of capitals 13 15 2.3.2 Integration of relevant ordering models 2.3.3 21 Sources, description and dates of Ionic and relevant non-Ionic capitals to 490 BC 2.3.4 58 The use of reconstructions of capitals 2.3.5 59 Chronological ordering of capitals 2.3.6 Geographical ordering of capitals 61 2.3.7 A datum for the Ionic standard capital 61 2.4 PHYSICAL CONTEXT OF AN EVOLVING IONIC ARCHITECTURAL CAPITAL 64 UP TO 525 BC AND OF RELEVANT VOTIVE COLUMN CAPITALS 2.4.1 Achieving a relevant data base of buildings and votive columns 64 2.4.2 Chronological ordering of buildings from the Ionic sphere up to 525 BC 81 2.5 OTHER ARTIFACTS BROUGHT INTO RELATION WITH THE IONIC CAPITAL 82 2.5.1 Identifying and demarcating further Hellenic artifacts related to an evolutionary view of the 82 origin of the Ionic capital 2.5.2 82 The problem of posing synchronic relations between artifacts from differing cultural

177

179

179

185

195

2.6	CONCLUSION		83
СНАР	TER 3 TYPOLOGIC	CAL INTERPRETATION OF RELEVANT ARTIFACTS	
3.1	INTRODUCTION		84
3.2	TYPOLOGICAL INTER	PRETATION FROM CHRONOLOGICAL AND	84
	GEOGRAPHICAL ORD	ERING OF THE ARCHAIC IONIC CAPITAL	
3.2.1	Morphological aspects emanating from the chronological ordering		
3.2.2	Morphological aspects relevant to geographical ordering		
3.2.3	A chronology of innovations in Aeolicising and first generation Ionic capitals		
3.2.4	Typological developments and experimental forms from the datum		
3.2.5	Statistical evaluation of the effects of introducing data arrived at from damaged capitals and		
	reconstructions of capitals	s	
3.3	FORM TYPOLOGY AN	D THE DEMANDS POSED BY TECHNE	98
3.3.1	The components of form		98
3.3.2	The making and ordering	of form: An approach and adherence to and evolution of	99
	tectonic rules		
3.3.3	The making and ordering	of form: The role of polychromy and appliqué in the articulation	102
	of capital form		
3.3.4	The role of geometry and	metricated design in the ordering and making of form	103
3.3.5	Integrating the idea with t	he execution - making the capitals	121
3.3.6	A search for synchronisity	y in sculpting of capital detail and sculpture technique	126
3.3.7	Aspects relevant to a cont	textual analysis	126
3.3.8	Recapitulation		141
3.4	CHAPTER CONCLUSIO	ON	141
СНАР	ΓER 4 TOWARDS TH	IE FOUNDING OF THE ARCHAIC IONIC CAPITAL	
4.1	TOWARDS A FORMAL	SYNTHESIS: THE EARLY IONIC CAPITAL	142
4.1.1	Design of form: An evolu	ntion from voluted non-standard to standard Ionic capital	142
4.1.2	Dating of certain capitals	from the typological analysis	173

TOWARDS A PRE-HISTORY OF THE ARCHAIC IONIC STANDARD CAPITAL

The use of the typological interpretation as guide for the identification of form-

Indications of an evolution from relevant minor arts

CHAPTER CONCLUSION

relatedness of preceding artifacts to that of the early Ionic capital and its elements

Indications of an evolution from Hellenic architecture preceding the Ionic capital

4.2

4.2.1

4.2.2

4.2.3

4.3

			iv		
СНАР	TER 5	RECAPITULATION, CONCLUSIONS AND RECOMMENDATIONS			
5.1	RECAPITULATION				
5.2	CONC	LUSION	198		
5.3	RECO	MMENDATIONS	199		
6	BIBLI	BIBLIOGRAPHY			
SUMN	MARY				
EKSE	RP				
APPE	NDIX 1	TYPOLOGICAL ASPECTS OF ARCHAIC IONIC CAPITALS AND			
		ARCHAIC IONIC BUILDINGS (UP TO 525 BC)			
APPE	NDIX 2	DRAWINGS OF RELEVANT ARCHAIC PRE-IONIC, AEOLIC,			
		AEOLICISING, CYMA, IONIC AND TORUS CAPITALS (UP TO 489 BC)		
LIST	OF TAB	LES			
	VI 1211		PAGE		
2.1	Archai	c Ionic capitals - qualitative description.	45		
2.2	Archai	c Ionic capitals - quantitative description.	46		
2.3	Chrono	ologically ordered inventory of relevant Archaic non-standard Ionic, Aeolic,	60		
	Aeolic	ising, cyma standard Ionic and torus capitals (625 up to 489 BC).			
2.4	Geogra	aphically and chronologically ordered Ionic and Aeolicising capitals 625-525 BC.	62		
2,5	Finer g	rained geographically and chronologically ordered Ionic and Aeolicising	63		
	capital	s 625-525 BC.			
2.6	Chrone	ologically ordered buildings from the Ionic sphere up to 525 BC.	81		
3.1	Trends	identified through chronological ordering of all Archaic capitals - Quantitative cri	teria.85		
3.2 Trends id		identified through chronological and geographical ordering of all Archaic capitals	-		
	Quanti	tative criteria.	88		
3.3	Typolo	ogical trends identified through chronological and geographical ordering of	91		
	all Arc	haic Ionic capitals - Qualitative criteria.			
3.4	A chro	nology of innovations in capital morphology.	92		
3.5	Synop	sis of the tectonic rules present in the Archaic Ionic capital.	100		
3.6	Relatio	onship between angle of load transition and ratio H:C.	108		
3.7	Types	of volute construction employed in Archaic Ionic capitals.	110		
3.8	Explo	ration of volute construction of Archaic capitals.	112		
3.9	Existin	ng research indicating standard units of measure, variations and their use	116		

65



	as base dimensions in Archaic Ionic buildings.	
3.10	Standard units of measure and their use as base dimensions in Archaic Ionic capitals.	117
3.11	Evaluation of the occurrence of probable base dimensions in pre-525 BC Ionic capitals.	120
3.12	Synopsis of the tectonic rules present in the Archaic Ionic façade.	131
3.13	Discernable proportional relationships in the façades of pre-525 BC Archaic Ionic buildings.	135
3.14	Ratios H:A and H:C for chronologically ordered Aeolic capitals.	140
LIST	OF FIGURES	0465
2.1		PAGE
3.1	Chronologically put Archaic standard Ionic capitals: Proportional relationship	86
2.2	between capital elements.	
3.2	Chronologically and geographically put standard Ionic capitals: Proportional relationship	90
	between capital elements.	89
3.3a	Volute construction diagrams of Archaic Ionic capitals by various authors.	113
3.3b	Explorative façade analysis of capital Ion-6 and Ion-50 using Büsing's (1987) method.	113
3.3c	Explorative diagrams of volute ordering methods of selected Archaic Ionic capitals.	114
3.4	Chronological trend of column slenderness ratio of relevant Archaic Ionic buildings	137
	up to 525 BC.	
3.5	Chronological trend of column slenderness ratio for Archaic Ionic buildings up to	137
	525 BC together with the earliest Ionic monumental votive columns.	
4.1	Illustrations of artifacts related to arguments around the evolution towards the standard	178
	Ionic capital.	
4.2	Timber Ionic Order by Durm (1910, Fig.315).	186
LIST	OF INDEXES RELATING TO CATALOGUES OF ARTIFACTS	
*	All capitals (Ion-, Iver-, Cym-, Aeol-, Excl-, Cont- and omissions).	22

Ionic and Aeolic buildings (Bld-), as well as Ionic free-standing columns (Col-).



SUMMARY

A corpus of early Ionic capitals.

by

Karel Anthonie Bakker

Supervisor

Head Research and Post Graduate Study, Division of Environmental Design and

Management, University of Pretoria

Co-supervisor

Dr H. Kienast

Prof D. Holm

Deutsches Archäologisches Institut Athen

Degree Philosophiae Doctor (Architecture)

Definition of the design evolution of the Hellenic Ionic Order and Ionic votive column typology is at present hampered by lacunae in knowledge regarding the Archaic Ionic capital in its foundational phase in architectural and glyptic art. The study identifies comprehensive contextually based typological knowledge of the Archaic Ionic capital as prerequisite to further understanding of its founding, in itself required to complete a design history of the Ionic Order and Ionic votive column. In this study this knowledge is represented in the form of a corpus where lacunae in current databases, typological ordering models and subsequent typological interpretations of the capital are filled through the inclusion of new data, integration of existing ordering models and through introducing new dimensions of interpretation. The study discloses style evolution as well as the design and making processes inherent to the early Ionic capital, and defines the early Ionic capital as one of the artifacts from which a particular focus of cultural endeavour in the Archaic Hellenic period may be reconstructed. Conclusions from the revisionary typological interpretation are employed in the formulation of a critical framework within which the achieved conclusions may be brought in relation with relevant contextual evidence and typological interpretations from other cultural enclaves, from which a history of the early Ionic capital may be constructed. The framework includes identification of existing interpretations and knowledge which have become irrelevant and the still required research, which may be brought in relation to existing knowledge. The achieved ordering model, typological interpretation and historiographical framework together act as open-ended reference, interpretive and explorative tools for further cross-disciplinary research into the evolution of the early Ionic capital as well as its architectural and artistic context. This is due to their integrative, comprehensive and contextual nature, as well as their formulation which accommodates changes emanating from future archaeological interpretation.



EKSERP

A corpus of early Ionic capitals.

deur

Karel Anthonie Bakker

Promotor

Prof D. Holm

Hoof Navorsing en Nagraadse Studie, Divisie vir Omgewingsontwerp en Bestuur,

Universiteit van Pretoria

Mede-promotor

Dr H. Kienast

Deutsches Archäologisches Institut Athen

Graad Philosophiae Doctor (Argitektuur)

Definisie van die ontwerpewolusie van die Helleense Ioniese Orde en Ioniese gedenkkolomtipologie word tans gehinder deur lakunes in kennis aangaande die Argaïese Ioniese kapiteel se vindingsfase in argitektuur en beeldhoukuns. Die studie identifiseer omvattende konteksgebaseerde tipologiese kennis van die Argaïese Ioniese kapiteel as voorvereiste vir verdere begrip van sy vinding, wat in sigself nodig is om 'n ontwerpgeskiedenis van die Ioniese Orde en Ioniese gedenkkolom te kan voltooi. In hierdie studie word die kennis verteenwoordig in die vorm van 'n corpus waar lakunes in resente databasisse, tipologiese ordeningsmodelle en daaruit vloeiende tipologiese interpretasies van die kapiteel ingevul word deur invoeging van nuwe data, integrasie van bestaande ordeningsmodelle en deur nuwe dimensies van interpretasie. Die studie openbaar stylevolusie sowel as die ontwerp en vervaardigingsproses inherent tot die vroeë loniese kapiteel, en identifiseer die vroeë loniese kapiteel as een van die artefakte waaruit rekonstruksie van die spesifieke fokus van kultuurbereiking in die Argaïes Helleense moontlik word. Afleidings vanuit die revisionêre tipologiese interpretasie word aangewend in die formulering van 'n kritiese raamwerk waarbinne die afleidings wat bereik is in verwantskap kan kom met word relevante kontekstuele getuienis en tipologiese interpretasies van ander kultuurenklave, waaruit 'n geskiedenis van die vroeë Ioniese kapiteel konstrueer kan word. Die raamwerk sluit identifikasie van bestaande interpretasies en kennis wat irrelevant geword het in, asook daardie benodigde navorsing wat met bestaande kennis in verwantskap gebring kan word. Die ordeningsmodel, tipologiese interpretasie en historiografiese raamwerk wat in die studie bereik is dien saam as nie-geslote verwysings, vertolkende en eksploratiewe werktuie vir verdere kruis-dissiplinêre navorsing oor die ewolusie van die vroeë Ioniese kapiteel sowel as die se argitektoniese en artistieke konteks. Hierdie eienskappe is te wyte aan hul integrerende, omvattende en kontekstuele aard, sowel as hul formulasie wat veranderinge voortspruitend uit verdere argeologiese interpretasie akkommodeer.