

RESOURCE SALVATION

The Architecture of Reuse

Mark Gorgolewski

Ryerson University
Toronto

WILEY Blackwell

CONTENTS

Foreword	ix–x
Acknowledgements	xi–xii
Definitions	xiii–xiv
1 INTRODUCTION	1–34
1.1 Background	4
1.2 Scarcity of resource	9
1.3 Waste and obsolescence	11
1.4 Permanence and repair	14
1.5 Material efficiency	18
1.6 Embodied energy and carbon	20
1.7 The circular economy	22
1.8 Reuse v recycling	26
1.9 Summary	29
References	30
2 CONCEPTS SUPPORTING REUSE	35–64
2.1 History of building component reuse	37
2.2 Barriers to reuse	43
2.3 Urban metabolism and resource flows	45
2.4 Urban mining	47
2.5 Upcycling – cradle to cradle	48
2.6 Salvageability and design for deconstruction (DfD)	50
2.7 Information – materials passports	55
2.8 Component redesign – design for reassembly and secondary use	57
2.9 Typologies of material reuse	59
References	61
3 CASE STUDIES	65–188
3.1 Adaptive reuse with component reuse	66
3.1.1 Allander – nothing is new	66
3.1.2 Posner Center for International Development – the horsebarn	74

3.1.3	Energy Resource Center (ERC) – A learning hub	81
3.1.4	Hughes Warehouse – building community	87
3.1.5	Roy Stibbs Elementary School – A building as a material bank	93
3.1.6	Hindmarsh Shire council corporate offices – old anchors new	97
3.2	Reusing what is available at the site	103
3.2.1	Ford Calumet Environmental Center – ‘form follows availability’	103
3.2.2	Hill End Eco-House	108
3.2.3	Tysons Living Learning Centre	114
3.2.4	Parkwood Residences – reuse of an old steel frame	121
3.3	Reusing construction materials from elsewhere	127
3.3.1	Headquarters of the European Council and Council of the European Union	127
3.3.2	La Cuisine, Winnipeg Folk Festival	134
3.3.3	Pointe Valaine Community Centre	142
3.3.4	Oasis Children’s Venture	148
3.3.5	The Old Oak Dojo	154
3.4	Secondary use of non-construction materials	161
3.4.1	Pocono Environmental Education Center – tyre wall	161
3.4.2	Big Dig House – from highway to housing	167
3.4.3	Kaap Skil, Maritime and Beachcombers Museum	175
3.4.4	Waste House – UK’s first permanent building made from rubbish	181
	References	187
4	MATERIALS INVESTIGATIONS	189–206
4.1	Nordic Built Component Reuse	189
4.2	Storywood	196
4.3	Reuse of structural steel	199
4.4	Rebrick project	203
	References	206
5	PRACTITIONERS	207–248
5.1	ROTOR	207
5.2	Milestone Project Management	218
5.3	Lendager Group	227
5.4	Superuse Studios	237
6	IMPLICATIONS FOR DESIGN	249–276
6.1	Design process characteristics	250
6.2	Performance issues	259

6.3 Understanding sources and opportunities	266
6.4 Decision process	273
6.5 Conclusion	273
References	274
BIBLIOGRAPHY	277-278
INDEX	279-280