Unravelling Textiles
A Handbook for the Preservation of Textile Collections

Foekje Boersma
with Agnes W. Brokerhof, Saskia van den Berg and Judith Tegelaers
# Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>xi</td>
</tr>
<tr>
<td>Introduction</td>
<td>xiii</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>xv</td>
</tr>
<tr>
<td><strong>1 Materials</strong></td>
<td></td>
</tr>
<tr>
<td>1.1 Fibres in general (polymers)</td>
<td>1</td>
</tr>
<tr>
<td>1.1.1 Classification</td>
<td>1</td>
</tr>
<tr>
<td>1.1.2 The chemistry and physics of polymers</td>
<td>2</td>
</tr>
<tr>
<td>1.1.3 Cellulose</td>
<td>3</td>
</tr>
<tr>
<td>1.1.4 Proteins</td>
<td>3</td>
</tr>
<tr>
<td>1.2 Vegetable fibres</td>
<td>4</td>
</tr>
<tr>
<td>1.2.1 Flax/linen</td>
<td>4</td>
</tr>
<tr>
<td>1.2.2 Cotton</td>
<td>5</td>
</tr>
<tr>
<td>1.3 Animal fibres</td>
<td>7</td>
</tr>
<tr>
<td>1.3.1 Wool/hair</td>
<td>7</td>
</tr>
<tr>
<td>1.3.2 Silk</td>
<td>8</td>
</tr>
<tr>
<td>1.4 Man-made fibres</td>
<td>10</td>
</tr>
<tr>
<td>1.4.1 Semi-synthetic fibres</td>
<td>10</td>
</tr>
<tr>
<td>1.4.2 Synthetic fibres</td>
<td>11</td>
</tr>
<tr>
<td>1.4.3 Morphology</td>
<td>12</td>
</tr>
<tr>
<td>1.4.4 Other synthetic fibres made from inorganic material</td>
<td>12</td>
</tr>
<tr>
<td>1.5 Textile techniques</td>
<td>12</td>
</tr>
<tr>
<td>1.5.1 Spinning</td>
<td>13</td>
</tr>
<tr>
<td>1.5.2 Weaving</td>
<td>13</td>
</tr>
<tr>
<td>1.5.3 Binding systems</td>
<td>13</td>
</tr>
<tr>
<td>1.5.4 Tapestries</td>
<td>14</td>
</tr>
<tr>
<td>1.5.5 Other techniques</td>
<td>14</td>
</tr>
<tr>
<td>1.5.6 Decorative techniques</td>
<td>14</td>
</tr>
</tbody>
</table>
4.2 Measuring devices
   4.2.1 Lux meter 48
   4.2.2 UVMeter 49
   4.2.3 Blue wool standard 49
   4.2.4 LightCheck strips 49

4.3 Visible light
   4.3.1 Damage to materials 50
   4.3.2 Light sources 50
   4.3.3 Measures to reduce light levels 51

4.4 UV radiation
   4.4.1 Damage to materials 51
   4.4.2 Light sources 51
   4.4.3 Measures to filter out UV radiation 52

4.5 Infrared radiation
   4.5.1 Damage to materials 52
   4.5.2 Light sources 52
   4.5.3 Measures to eliminate IR radiation 52

4.6 Light sources
   4.6.1 Fibre optics 56
   4.6.2 Energy efficiency 57

4.7 Presenting a textile collection
   4.7.1 Lighting design 57

4.8 Recent developments 59

5 Insects and fungi in textile collections 61

5.1 Insects
   5.1.1 Characteristics 61
   5.1.2 Development 61
   5.1.3 Requirements 62
   5.1.4 Insects in textile collections 62

5.2 Fungi
   5.2.1 Fungi in textile collections 67
   5.2.2 Characteristics and development 67
   5.2.3 Requirements 68
   5.2.4 Damage caused by fungi 68
   5.2.5 Active or not? 68

5.3 Integrated pest management
   5.3.1 The five steps of IPM 69
   5.3.2 Detection 71

5.4 Disinfestation and disinfection methods
   5.4.1 Insects 72
   5.4.2 Fungi 74
   5.4.3 Other methods 76
   5.4.4 Choosing the most appropriate disinfestation method 78
### 6 Storage

6.1 Storage facilities
- **6.1.1 General guidelines**
- **6.1.2 Preventive measures**
- **6.1.3 Quarantine**

6.2 Storage systems and materials
- **6.2.1 Suitable systems**
- **6.2.2 Suitable materials**
- **6.2.3 Access to and use of storage facilities**
- **6.2.4 Objects in storage**
- **6.2.5 Location of collection (s) in museum buildings**

6.3 Storage of textiles
- **6.3.1 Large and/or long two-dimensional textiles**
- **6.3.2 Small two-dimensional textiles**
- **6.3.3 Flat textiles with pile**
- **6.3.4 Flat, composite objects**
- **6.3.5 Three-dimensional textiles**
- **6.3.6 Three-dimensional objects**

### 7 Transportation

7.1 Determining the object's fragility
7.2 Risk analysis of the transportation route
- **7.2.1 Means of external transportation**
7.3 Optimising the object and/or route
7.4 Determining the necessary protection and designing the packaging
7.5 Packing the object
7.6 Transporting/couriering
7.7 Unpacking and checking the object
7.8 Evaluate and improve approach

### 8 Textiles on display

8.1 Temporary exhibitions
8.2 Textiles as part of a (semi-)permanent exhibition
8.3 Textiles in interiors
- **8.3.1 Light**
- **8.3.2 Environment**
- **8.3.3 Abrasion**
- **8.3.4 Replicas**
- **8.3.5 Seasonal closure**
- **8.3.6 Showcases or open display?**
- **8.3.7 Climatic conditions and showcases**
- **8.3.8 Light and showcases**
8.4 Exhibiting textiles
- **8.4.1 Large and/or long two-dimensional textiles**
- **8.4.2 Small two-dimensional textiles**
- **8.4.3 Flat textiles with pile**