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Introduction

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INTRODUCTION

»Without a properly functioning irrigation system, it is impossible to conjure up fresh meadows and lush forests from the Sandberg.«

These words do not come from the mouth of a garden preservation expert in the 21st century in the light of the increasingly hot and dry summers in Germany but from the year 1847 and were spoken by the famous garden architect, Hermann Fürst von Pückler-Muskau, during his visit to the newly landscaped Babelsberg Park. It was not until he set up steam-powered waterworks on the Glienicke Lake that he succeeded in transforming these extensive grounds into a lush landscaped park with old mature trees.

The Prussian Palaces and Gardens Foundation Berlin-Brandenburg (Stiftung Preußische Schlösser und Gärten Berlin-Brandenburg, SPSG) today manages the picturesque Babelsberg Park opposite the Glienicke Bridge. In view of the signs of climate change, which have become more and more apparent in recent years, the foundation faces a major challenge: In accordance with its task of preserving historical monuments, it must preserve or restore the overall complex in its artistic visual appearance. Historical gardens such as the Babelsberg Park, as overall works of art in which nature, art and architecture intermingle in creative harmony, boast a special feature that distinguish them from other works of art: They are composed mainly of natural materials that are prone to weather factors, namely trees, shrubs, flowers, lawns and meadows. Therefore, these works of art are largely exposed to current climate change and the resulting impact.

Phenomena associated with climate change such as extended vegetation periods and increasing dry periods in spring and summer lead to new concerns as is the case with Babelsberg Park: It has been proven that flowering begins earlier making plants susceptible to late frost; many trees and plants are unable to cope with the increasing drought stress and become more vulnerable to pests – some of which are new – or die prematurely. The violent storms that occurred in rapid succession in recent years (most recently »Xavier« 2017) led to windthrow or extensive tree and branch breakage as the wind hit strongly foliated trees due to the extended vegetation period. Short heavy rains flow off to a large extent

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superficially, no longer fill up the water reservoirs in the ground and regularly wash out the old path systems which can only be restored at high economic cost.

In the Wörlitz Garden in Saxony-Anhalt, one of the earliest English landscape parks on the European mainland which was already famous among garden lovers in the 18th century, the garden experts have been struggling for centuries with a completely different problem – too much water. Since the so-called record floods, the extreme floods in summer 2002 and 2013, the public is aware of the destructive power of water. An elaborate scientific project initiated by the Kulturstiftung Dessau-Wörlitz examined the condition of the entire tree population, the nutrient content of the soil and the groundwater dynamics of the garden complex in order to derive necessary maintenance measures. It is possible that such model projects will point the way for the preservation of the valuable tree stands and the variety of ornamental plants in Germany's numerous historical gardens.

In addition to the Babelsberg Park and the Wörlitz Park in Saxony-Anhalt, both UNESCO World Heritage Sites, the Großer Tiergarten in Berlin and the Fürst-Pückler-Park Branitz in Cottbus in southeast Brandenburg[1], were the subject of investigations carried out by the interdisciplinary research group (IRG) »Historic Gardens and Climate Change« of the Berlin-Brandenburg Academy of Sciences and Humanities. During its three-year term (2016–2019), the IRG has strived to find answers to the question of whether and how, in the future, historical gardens, parks and cultural landscapes can be professionally preserved as protected cultural assets under the changed climatic conditions to ensure that they continue to fulfill their historico-cultural role.

The IRG, therefore, took up the demands of the »Sanssouci Declaration on the Preservation of Historical Gardens and Cultural Landscapes«[2] of 5 September 2014. This declaration stated that there exists an »acute and medium-term need for research« in order to be able to adequately describe »threats posed by the consequences of climate change to historical gardens, buildings and cultural landscapes«. According to the wording of the Declaration, this »is a joint task for the natural sciences and the humanities, as only in this way effective strategies for action can be developed in the longer term to counter the negative effects on our cultural heritage in a sustainable and cross-border manner«.

With this volume, the interdisciplinary research group presents the results of its investigations. Research on the four selected case study gardens was carried out in the following thematic clusters: »Art History and Heritage Preservation«, »Natural Landscape Features« and »Social Framework Conditions and Social Science Perspectives«. The contributions collected in the chapter »Art History and Heritage Preservation« focus on art (historical)

1 Cf. the contribution of Adrian von Buttlar in this volume.

2 https://www.spsg.de/index.php?id=10752. The »Sanssouci Declaration» was edited within the international conference »Historic Gardens and Climate Change» in September 2014. Cf: Generaldirektion der Stiftung Preußische Schlösser und Gärten Berlin-Brandenburg (SPSG, Editor) (2014): Historic Gardens and Climate Change. Recommendations for Preservation. Leipzig: Seemann Henschel.

and historic preservation fundamentals of historic gardens and deal, among other things, with the development of garden conservation in theoretical and practical terms.[3]

In the chapter »Natural Landscape Features«, relevant information and research results on the natural landscape features of the four sample gardens was systematically compiled and compared for the first time in order to identify the risks and changes resulting from climate change and the role played by local factors. The starting point of the investigations was the assumption that extreme climatic conditions had already played a role in the development of these gardens since they are all located in the continental part of eastern Germany, but due to the specific site conditions they all react differently to the low annual precipitation and the prolonged summer droughts.

Not only the physical environment, but also social conditions play a role in the preservation of historic gardens, for gardens are used, valued and managed by people and are, therefore, genuinely social institutions. The authors of the chapter »Social Framework Conditions and Social Science Perspectives« present a multi-faceted picture of the gardens and, for the first time, demonstrate the importance of a social science analyses for a holistic picture of historical gardens under climate change.

In view of the fact that climate change is a global phenomenon, the interdisciplinary research group »Historic Gardens and Climate Change« has held two international conferences. The resulting contributions which refer to historic gardens in Great Britain, Italy and Russia are collected in the chapter »International Perspectives«.

»Theoria cum praxi« was the motto of Gottfried Wilhelm Leibniz, the founder of the Berlin Academy of Sciences and Humanities. The final chapter of the volume shows that this philosophy is, today, more justified than ever with regard to the future preservation of historic gardens and climate change: Only through systematic interdisciplinary research of the framework conditions and influencing factors from present and past perspectives can the expertise required for sustainable garden conservation and appropriate (practical) measures be generated.

3 Cf. the introductions of the chapters, pages 3–5, 151–153, 271–272 und 335–336.