

## Theatrum machinarum. Automaták és mechanikus játékok a kora újkori gyűjteményekben [Automatons and Mechanical Clockworks in Early Modern Collections]. By Dalma Bódai.

Múltidéző zsebkönyvtár. Budapest: L'Harmattan, 2021. 207 pp.

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The world—as mechanical theatre. Dalma Bódai's book is an excellent synopsis of those most exceptional pieces found in the collections of early modernity concerning automata and other similar mechanical contraptions. The treatise follows a well-defined and well-constructed train of thought, from an introductory piece on collections and the history of mentalities to an introduction of the automata themselves. The method applied by the author, as known from the toolbox of cultural history, involves presenting prevalent philosophies and mentalities through objects from the Renaissance to the new 'scientific' approach brought forth by the Enlightenment.

The treatise consists of two well-identifiable parts which themselves are broken into smaller chapters (five and six of them, respectively). In the first part, we are given an overview of the novel collection structures that began to take form in the sixteenth century, illustrated by the introduction of several different collections. In the second part, the most curious clocks/clockwork items and automata are subjected to close examination.

The precursor to the various *Kunstkammers*, *Wunderkammers*, and *Raritätenkabinets* was the medieval treasury, consisting of paintings, various items wrought of precious metals, natural curiosities, weapons, mechanical contraptions, numismatic collections and antiquities, which often included a library as well. From the fifteenth century onward, fundamental changes could be perceived in the structure of collections, mainly due to changes in thinking brought about by the Renaissance and the new schools of thought. Precious metal-based thesaurization gave way to the hoarding of natural curiosities and knowledge. New and hitherto unknown specimens of plants and animals found their way to Europe through increased trading activity and the efforts of explorers, and in Europe the collecting of rare, exotic curiosities

of nature became more and more widespread. Novel methods of taxidermy, moreover, led to an increase in the diversity of species found fit to prepare and present. Changed were ideas about the positioning and storing of collections, too: presentation overshadowed mere preservation inside locked treasuries, and objects of the same kind were displayed in separate rooms and bespoke cabinets. The new perspective about collections was reflected in the fact that specialists were employed to order, catalogue, and maintain these hoards, and to guide guests through them. The difference between the *Kunst-* and the *Wunderkammer* might best be explained by stating that the former consisted mostly of works of art, while the latter predominantly featured natural curiosities.

The sources through which we can acquaint ourselves with collections and treasuries are travelers' diaries, catalogues, inventaria, illustrated registers, and—in a broader sense—guidebooks written for the hoarders themselves. In the first chapter, as an introductory note, we are given some examples from the diaries of Hungarian noblemen and politicians (such as Gábor Haller, Kristóf Batthyány, and Mihály Bethlen), which present to us, in varying detail, descriptions of the *Kunstkammers* visited during their sojourns, such as those of the Bavarian and Saxon elector princes. Travelers' journals from the sixteenth century onward were so popular that itineraries were published, designed to aid travelers by counselling them on the sights most worth seeing, and providing guidelines for their own writing of journals.

In the next chapter we are acquainted with the most important royal collections in Europe. A straightforward overview is given, among others, of the Ambras collection of Ferdinand II (1529–1595), the imperial count of Tyrol, and of the Prague treasury of Rudolfs II (1552–1612) the Holy Roman Emperor, through which we are presented with a comprehensive picture of the history of collecting and collections in Europe. These royal collections might have served as models for the Hungarian aristocrats in ordering their own treasuries. It is evident from the journals and notebooks of aristocrats setting forth on a diplomatic mission, or young noblemen travelling abroad to see the wider world, that several famous *Kunstkammers* and *Wunderkammers* were frequented, contributing to the exchange of scientific knowledge between different countries and lands. In this process, collections featured not only as 'indicators' but also the other way around: they themselves were influenced by knowledge gathered elsewhere. The personality, influence, and family history of collectors were mirrored in collections themselves, thus conscious collectors selected the pieces of their hoards they desired to represent with self-representation in mind.

In the third chapter the author discusses the *Wissenschaftsmuseum*, a fascinating group of collections, through some well-chosen examples. Besides those of the alchemist-scholar Ulisse Aldrovandi (1522–1605) and polihistor Athanasius Kircher

(1602–1680), accounts are given of the collections of apothecaries and botanists as well. As is common in their case, the collections served the purpose of scientific exploration and presentation and were accompanied with catalogues to aid in their researchers' scholarly pursuits.

From the various collections to be found in the Kingdom of Hungary and Transylvania, those of the time of Matthias I (1443–1490) went beyond the original purpose of hoarding for the first time. The treasury of Matthias I (which included collections of weapons, jewelry and cutlery, precious textiles and natural curiosities; it is also to be noted that he also maintained a menagerie, complete with a birdhouse, camels, and lions) was the archetype against which the aristocratic collections of early modernity measured themselves in spirit and in the types of objects to be collected. It is difficult to pin down the moment of change between the various roles—the exact turning point from tesauration to representation. Nevertheless, it is certain that, by the end of the era, treasuries, which started off as merely hoards of valuable objects, had become diverse collections that represented the widening worldview of their aristocratic owners. In this chapter we are introduced to the grandest of the Hungarian collections: that of the Thurzó family—with the more important pieces highlighted—, and also those of palatine Pál Esterházy (1635–1713) and Ferenc Nádasdy (1623–1671) in great detail. The author does not stop at illustrating these latter two with some memorable artefacts but explains their structure too through some inventaria. Justifiably more attention is given to these treasuries, their owners being the greatest individuals in the history of aristocratic collection in Hungary. The Western mentality of collecting (that of hoarding and cataloguing on a scientific basis), however, may only be traced from a century later (Samuel von Bruckenthal, Gedeon Ráday).

Following the spread of *Kunstkammern*, collectors' guidebooks appeared that specified the types of collectibles, provided instructions for their organization, storage, and presentation. Among them the work of Samuel Quiccheberg (1529?–1567), in the employ of Albert V prince of Bavaria (1528–1579), was perhaps of the highest impact. Collectors' guidebooks, besides being important sources of the history of collecting, also show that the (aspirant) collectors were familiar with these manuals, and that the manuals themselves were the cornerstones of their respective collections. With their aid, the aspirants hoped to rise to meet the 'expected' European requirements and raise the quality of their collections to European standards. It would go beyond the scope of this review to ascertain whether these manuals or the monographs on hydraulics discussed later in the treatise really featured in the libraries of Hungarian aristocrats. The work displays a confident grasp of the relevant literature in foreign tongues; here and in the chapter on *Wissenschaftsmuseums* the author finds her way easily among the diverse sources of the sixteenth and seventeenth centuries, amassing them systematically.

After the reader is presented, piece by piece—as in a puzzle—with a description of the mentalities and the significance of the *Kunstkammers* and *Wunderkammers* of early modernity, we reach the titular subject of the book. At this point it might seem that the author has approached the topic from a very distant vantage point; yet the indispensable background of the history of ideas aids significantly in the analysis of the role, place, and importance of automata in collections.

But what is an automaton? What does the term cover, and what did it symbolize to its collector? The first question might be approached from two different angles. The automaton is a mechanical clockwork device. ‘Self-reliant’ machines were a matter of miracle and magic in the time of the Renaissance. The prototypes of such objects were desktop timepieces decorated with moving figures. From the time of the Renaissance onward, the scholars of the *Kunstkammers* used clocks and various other mechanical contraptions to obtain insight into the inner workings of the world itself. Clockwork devices, moreover, granted their owners a certain sense of grand representation, being valuable and intricate beyond the usual standards of contemporary technology.

At the beginning of the second part of the book we are told that the first ‘automata’ of ancient antiquity were powered by water (*κλεψύδραι*); later, the same principle was used in the grottoes of late Renaissance and Baroque gardens. Following this illustration of the clockwork device, we are presented with the automaton itself—reasonable, the two being grounded in the same principle of construction. Examples are given of some of the tabletop astronomical and planetary timepieces, and also of figural ones representing lions, eagles, and camels. These animal motifs sometimes had a symbolic meaning: the lion referring to the Bavarian elector prince, the eagle to the House of Habsburg, etc. The author assigns to every artefact its maker (if known), its date, its physical details, and the description of its workings, its commissioner (if identifiable), its place in one or another collection in the early modern period, and its current location in a museum, be this located in Europe or America. The inventory number is usually given among the footnotes, but on more than one occasion this is missing, and the author gives only bibliographical references.<sup>1</sup> As for the tabletop Diana-automaton of the Metropolitan Museum, although the picture is presented, the description of the object is missing. There were numerous stages of transition between clocks and automata, therefore defining the types of objects is a hard and much-disputed task. There are instances of mechanical contraptions playing

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1 Some examples: the planetary clock of Wien, the ship automaton of the Hans Schlottheim – Kunsthistorisches Museum; the ship automaton of the museum of Écouen; the Bacchus-automaton from the treasury of Fraknó; the ‘Triumph of Bacchus’ automaton in the Museum of Applied Arts; the Chariot of Diana – Yale; Diana Mounted Upon a Centaur—Grünes Gewölbe; automaton of a monk—Smithsonian.

music, clocks playing a note upon the striking of an hour, music-boxes adorned with moving figures, and moving automata that played music besides, thus we cannot define strict boundaries between the types. The composition and the iconography of given objects were decided upon by the artisan and the commissioner together. The intricacies of internal clockwork mechanics were influenced not only by continuous technical development, but also by the extent of the artificer's knowledge.

The centerpieces of the figural clocks presented as examples (such as those with the lion, eagle, or camel motif) are the figures themselves, while the purpose of the clocks is to function as timepieces. It is the opposite with automata: with these, movement becomes central, although clock faces still feature in some pieces. Within a *Kunstkammer*, the principal goal of the automaton is to assist with reflection upon a mechanical worldview—the imitation of life through movement.

The author dedicates a whole segment of the book to one of the most popular types of automaton—those shaped like ships or chariots/carriages. The figures in such pieces are capable of movement, as are sometimes the ships or the chariots. From the mass of objects within this category the author has chosen to represent the choicest presentable pieces: nine ships in total (three of them function as clocks as well), five contraptions featuring Bacchus and nine more showing Diana; automata wrought in the likeness of elephants were popular as well. Machines that model the movement of animals create the illusion of life: there are accounts of contraptions designed to move like tortoises, crabs, spiders, bears and swans. An account is given of the 'Peacock Clock', a design by the English inventor James Cox (1723–1800) depicting a forest scene, spanning three meters and also featuring figures of an owl and a rooster. The art of the automaton reached its zenith in the eighteenth century with the invention of machines capable of modelling the human body (to an extent) and of executing complicated movements, although simpler designs of the same kind are known from the sixteenth century. Between 1768 and 1774 the inventors Pierre Jaquet-Droz, his son Henri-Louis, and Jean Frédéric Leschot collaborated to design three anthropomorphic automatons. One of the child-shaped contraptions draws one of four pre-programmed drawings; the other is capable of writing different texts, while in the third a lady plays the harpsichord. The evolution of automata is thus completed in two centuries: from the clocks and music-boxes of the sixteenth century to moving, figural timepieces to devices capable of modelling the human form and activities in the eighteenth century. Artisans and tinkerers, according to the contemporary way of thinking, had—like God himself—created Man.

The author thus shows us a truly representative selection of the choicest objects, presenting artefacts ordered through themes and analogies, as in a catalogue. The physical restrictions of the volume itself prevent the publication of more color pictures, notwithstanding the imperative need imposed upon the author by the

source material to do so. Nonetheless, in the ‘age of the internet’ many such pictures might be found in the online catalogues and collections of different museums. Should the reader wish for a rich store of pictures and several interesting sidenotes to accompany this book, the author’s four-part series of lectures on the world of automata (based on the structure of the volume) is available for perusal on the Facebook page of *Pesti Bölcsész Akadémia* (April–May of 2021).

There are few misspellings in the book, mainly concentrated on a certain few pages, and only one major grammatical error in the whole volume. The picture of the bell automaton is clearly not of the author’s own making—this is confirmed by the online database of the Kunsthistorisches Museum. These observations, however, subtract little from the value of the grandiose work of the author, which shows great power of composition. The author’s knowledge and grasp of the literature outside of her own country is prodigious: more than half of the cited works and around 40 percent of the sources are written in a foreign language.

The work is not a catalogue in the strictest sense of the word, since its store of pictures is not large enough, yet it is somewhat of a catalogue, and more than that. Catalogue it is, since it presents the artefacts by following a given set of principles, yet it is more, since it also presents a historical and idea-historical background for the formation of the *Kunstkammers* and *Wunderkammers* and the collection of automata—scarcely possible within the limits of a catalogue. Rare is such a thematic description—and thus the bar for later work by the author is set high indeed.

