

Editorial

# Johann Wolfgang von Goethe, Götz von Berlichingen, and the „Iron Hands“

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Knight Götz von Berlichingen (1480–1562) was born into a time of upheaval during the transition from the late Middle Ages to modern times. Götz bravely defended the ideals of declining chivalry. He fought in numerous battles and engaged in several “feuds” with various other knights and even cities; during the Landshut War of Succession (1504/05), he lost his right hand in 1504 due to a cannonball splinter injury [1].

His autobiography [2], which he dictated to a priest at the end of his life, served the young Goethe as a source of inspiration for his *Sturm und Drang* drama “*Götz von Berlichingen mit der eisernen Hand*”. It premiered in Berlin on 12 April 1774 and is still performed today, 250 years later, in many places, including the knight’s castle of birth in Jagsthausen near Heilbronn/Germany.

Early after the injury, Götz thought about replacing his hand and commissioned a gunsmith to build the first “Iron Hand” [2]. In this prosthesis, the artificial thumb and two finger blocks could be moved in their basic joints by a spring mechanism and released by a push button [3]. Probably around 1530, a second “Iron Hand” was built. With this hand, the fingers could be moved by complex mechanics in all joints [4]. Although the second prosthesis was more elaborate than the first prosthesis, the knight seemed to continue using the first prosthesis much more frequently in everyday life, not least because it was more robust and easier to use. Both prostheses are still preserved and can be viewed in a glass showcase at the Jagsthausen Castle Museum (Figures 1 and 2).

The “Iron Hands” of Götz von Berlichingen were, and still are, an impetus for the development of many other hand prostheses that have followed until today [5,6]. We recently reconstructed the first “Iron Hand” with a 3D computer-aided design (CAD) and found that with the polymer-printed replica of this prehistorical prosthesis, simple actions for daily use were possible without effort [7]. A 3D CAD reconstruction of the complete second “Iron Hand” is underway. However, the mechanics of this second hand are still challenging today [8].

Last but not least, Götz von Berlichingen’s life and character were a true source of inspiration for Johann Wolfgang von Goethe and continue to be so for us on the occasion of the 250th anniversary of the Goethe drama.

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**Figure 1.** First “Iron Hand” of Götz von Berlichingen, original, Jagsthausen Castle Museum. Picture credits: A. Otte, with kind permission from Götz and Hans-Sigmund Freiherrn v. Berlichingen.



(a)



(b)

**Figure 2.** Second “Iron Hand” of Götz von Berlichingen, original, Jagsthausen Castle Museum. Picture credits: A. Otte, with kind permission from Götz and Hans-Sigmund Freiherrn v. Berlichingen. (a) Lateral view, with the autobiography in the background; (b) insight into the artificial forearm cuff.

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