

## Scholars Then and Now

### From Allrounders to Specialists, A Journey Through The Ages

Is it possible to know everything in every discipline? Surely not, especially not in modern times in which it is increasingly important to have experts of an explicit field of knowledge. We all remember some real whiz kids from our school years but only a very few of us can be outstanding experts in widely varied fields. Just imagine the time you would need to learn all of it.

The old all-round talented scholars from ancient Europe seem to personify knowledge itself, since they did not restrict themselves to a specific science. They engaged in philosophical and moral matters as well as in fundamentally science-oriented issues.

Let's take Aristotle as an example. He lived about c. 400 BC in ancient Greece and was in similar ranks of Plato and Socrates. He set standards in logic, metaphysics, philosophy of nature, ethics, politics and physics. Aristotle surely did not consider himself satisfied with only one issue - his curiosity seems universal.<sup>[1]</sup>

The Middle Ages, mainly shaped by the ideology of the roman-catholic church is always said to be a hostile time for science and rational knowledge. But even here, we find outstanding minds. Just look at Hildegard of Bingen, the Benedictine abbess (1098–1179). Of course, she surrounded herself with Christian mysticism but at the same time, she composed songs and wrote essays about cosmology and the art of healing that are still of some relevance today.<sup>[2]</sup> She was not necessarily a scholar but she had influence and intellect. Quite an achievement for a woman of that time!

Somebody on whom we absolutely must shine a bright light, when talking about universal geniuses, is Leonardo da Vinci (1452–1519). He was clearly the champion in combining arts and sciences. Just think of all his anatomical studies, the sketches of aircrafts, weapons and military equipment of all sorts. And of his numerous paintings with the Mona Lisa and The Last Supper leading the way. da Vinci studied the flight of birds, dissected bodies and wrote treatises about perspective and shade in paintings.<sup>[3–4]</sup> The keynote of his complete work - the unity in arts and sciences - still inspires and mesmerizes people all over the world. In the year 2000, Adrian Nicholas built a parachute based on da Vinci's sketches that had never been realised until then. In spite of severe warnings by experts, he tested the device from an altitude of about 2000 m - and it worked!<sup>[5]</sup> What

a great mastermind and pioneer Leonardo da Vinci was.

Comparably remarkable is the work of Johann Wolfgang von Goethe (1749–1832), who probably was the most impressive poet of Germany.<sup>[6]</sup> He began his career as a law student in Leipzig and later held different offices in civil service. At that time, he already wrote poetry, influenced by the ancient writers, Shakespeare and of course, his numerous love affairs. Later, his famous works like "Die Leiden des jungen Werthers" ("The Sorrows of Young Werther") and "Faust I and II" followed. His complete works reflect all the literary movements of the late 18th and early 19th century. Next to his poetry and dramas, he also showed huge interest in natural sciences, ranging from research about granite over human and vegetal anatomy to optics and Newton's theory of colours. Even the mineral FeO(OH) was named Goethite to honour his commitment to geology.<sup>[7]</sup>

Last on the list is Alexander von Humboldt (1769–1859) who explored the world frequently at the risk of his life. In contrast to his early passion for science, he studied public economy in Hamburg, Germany. After he earned enough money by developing tools for miners, he started to circumnavigate the world. On his journeys, he discovered and studied a plethora of places, plants and animals. A lot of them now carry his name, making him immortal.<sup>[8]</sup>

When I was a child, I did not differentiate between the natural sciences. I loved watching documentaries on TV, no matter the topic, be it astrophysics or plant life (although, it was sometimes hard for me to follow the details). The question about my desired career I always naively answered with "nature researcher", meaning that I wanted to examine everything I could get hold of. Later, I realized that Natural Science is too complex to be studied altogether so I ended up with Chemistry. For researchers in the past, it must have been similar. There was no straight division between the disciplines and the material and financial conditions must have been different. Historically, the knowledge was not as advanced as it is today and the engagement in different disciplines was not such an intellectual challenge. Today, we have so much more specialized scientists, merged in intercultural and sometimes interdisciplinary research fields following the old scholars' footsteps. The secrets of the world are slowly unravelled only by the works of all these experts.

— Tatjana Dänzer

## References

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- [8] <https://www.welt.de/wissenschaft/article3672722/Der-letzte-Universalgelehrte-der-Menschheit.html> (12.03.2017)