Science, Arts and Humanities in a Changing World

Authors: Joachim Frank

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Science, Arts and Humanities in a Changing World

Festvortrag zur 50. Jahrfeier der Mertelsmann-Stiftung am 4. Oktober 2024

Joachim Frank
jf2192@cumc.columbia.edu
Columbia University Irving Medical Center, New York, United States of America

Abstract

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Lieber Roland, liebe Festgäste,

The title of my talk sounds like a mouthful, as the English expression goes. To make it clear right at the start, I will not and cannot speak about the way Science, the Arts and Humanities are developing as individual fields of human endeavor. Talking about this would take the stature, scholarship and diction of a full-fledged historian and philosopher. It would also take until midnight.

Rather, what I had in mind is to speak about the vision of unity implied in the name of the journal Dr. Roland Mertelsmann started in 2014, the Journal of Science, Humanities and Arts --or JOSHA.

That title reflects a holistic, interdisciplinary vision--still keeping up the vision of the Renaissance, in which these three fields of human endeavor coexisted in harmony and could be invoked in the same breath.

Science, the arts, literature, philosophy are distinct activities, divided by goal, medium, and methodology, yet they have much in common: human curiosity, creativity and ingenuity. As fields they talk to each other, inform each other, borrow from each other, use each other's metaphors. Germany once harbored a unique person who contributed to science, art, literature and philosophy of his time in major ways: Johann Wolfgang von Goethe. In a singular way Goethe personified this quest for unity, but he may have been the last one with this capacity.

Two-page color illustration for "Pilze" – mushrooms -- in Meyer's Konversationslexikon

I'm reminded, in passing, of **Meyer's Konversationslexikon**, Meyer's 20-volume encyclopedia, which was also launched with the same all-embracing concept. As a young boy I spent **hours in the living room** leafing through its twenty-thousand pages, with scholarly articles and beautiful color gravures compiled by hundreds of experts.

Unfortunately, the fact that the edition was purchased by my grandparents in 1905 posed a severe limitation on my quest for knowledge.

Two-page color illustration for "Nearktische Fauna" – near-arctic fauna -- in Meyer's Konversationslexikon

JOSHA, whose first issue appeared on December 18, 2014, was conceived, in my understanding, as a place for unedited archival deposition of any eruditions in all three fields. That is, unedited, yet passing a certain minimal but critical quality check. The very idea of combining all three fields in one journal reflects the hope, the expectation, that it will spawn a lively discourse among its contributors and its entire readership that will transcend their individual scopes and lead to some kind of synthesis. I believe from my interactions with Roland that JOSHA reflects the very spirit of the *Mertelsmann Foundation* whose anniversary we celebrate today. Indeed, this is what its mission statement says: "We stimulate and facilitate creativity, and discovery in Medicine, Science, as well as in Humanities and Arts."

I first took advantage of JOSHA's broad scope after visiting Argentina, in 2019, as I tried to find a place where to publish my lecture of acceptance of an honorary doctor title from the University of Mendoza. [This visit was in fact made possible by the generosity of Roland and his Foundation]. **My lecture** outlined the zig-zag trajectory that led from my time at my Freiburg Alma mater to my first visit to Argentina. It incorporated among other things Jorge Luis Borges' short story about a Chinese Emperor's classification of all worldly things, a mention of the parasite causing Chagas disease, linear algebra, Paul Klee's concept of a twitter machine,

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the science fiction idea of a truth filter, and last but not least, the field of my scientific research: cryo-electron microscopy.

Where else in modern time but in JOSHA could I reach a sophisticated audience with such a range of content? And where else could I get my lecture disseminated at a prominent place without having to battle with reviewers and editors? The possibility of such a journal is of course a result of the digital revolution, which eliminated the cost of printing altogether, so an article with, say, 50 pages richly illustrated with color figures no longer poses a problem.

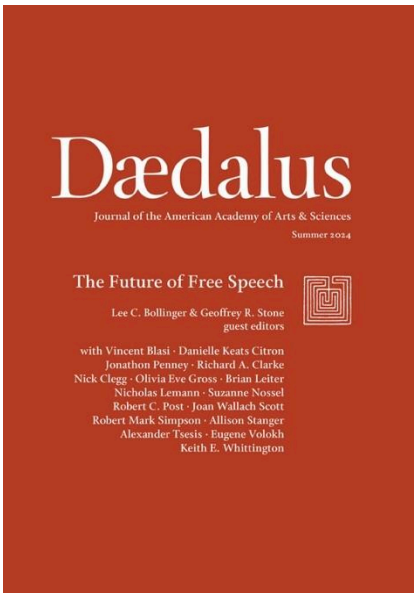
I can think of two journals that share or have shared JOSHA's scope and vision, **STUDIUM GENERALE** and **DAEDALUS**, both in print format.

First, I'd like to talk about **STUDIUM GENERALE**: it was an enterprise started in Germany in 1947 by K.H. Bauer, L. Curtius, and M. Thiel*.* The time after the Second World War and the Third Reich, which caused utter destruction of values held sacred for long, brought with it a search for a new foundation for the society in Germany, and I believe the revival of the idea of an all-encompassing spirit of human endeavor was part of this revival.


STUDIUM GENERALE
ZEITSCHRIFT FÜR DIE EINHEIT DER WISSENSCHAFTEN IM ZUSAMMENHANG IHRER BEGRIFFSBILDUNGEN UND FORSCHUNGSMETHODEN
K. H. BAUER · L. CURTIUS · H. v. EINEM · P. ERNST · H. FRIEDRICH
W. FUCKS · E. HOFFMANN † · E. v. HOLST · K. JASPERS · A. E. JENSEN
A. JORES · H. KUHN · FR. OEHLKERS · H. PETERS · E. PREISER
K. REIDEMEISTER · F. H. REIN · W. RÖPKE · H. H. SCHAEDER · R. SMEND
G. SÖHNGEN · H. THIELICKE · J. TRIER · C. TROLL · A. WEBER
C. F. v. WEIZSÄCKER · H. WENKE · J. ZUTT
M. THIEL
Springer-Verlag Berlin Heidelberg GmbH
INHALT:
VORANKÜNDIGUNG:

When I was a student, in the 1960s, we considered STUDIUM GENERALE an exciting cutting-edge journal that strived for unity in the fields of natural sciences and humanities: it was called *Zeitschrift für die Einheit der Wissenschaften im Zusammenhang ihrer Begriffsbildungen und Forschungsmethoden, or Journal for the unity of sciences as related to their concepts and research methods.* As a recipient of stipends from the Studienstiftung in the 1960s, I eagerly met with other *Studienstiftlers* in workshops to discuss articles fresh from the press of STUDIUM GENERALE. I remember issues devoted to eternal themes like *Time*, *Symmetry*, and then-entirely new directions like *Cybernetics* and *Behavioral Science*. For a few years it made us feel like being part of an avantgarde of some sort, capable of keeping together threads of a high-level discourse that would eventually lead to solutions of the complex problems of that time. Of course, this was an illusion, which disappeared quickly once we discovered the limitations of our

agency in academia, employment and politics later on. STUDIUM GENERALE itself lasted only until 1971.



DAEDALUS, in the USA, is the open access Journal of the **American Academy of Arts and Sciences**. As a Fellow of the Academy since 2006, I'm receiving a subscription. Here is the journal's self-description: "Drawing on the nation's most prominent thinkers in the arts, sciences, humanities, and social sciences, as well as the professions and public life, DAEDALUS explores the frontiers of knowledge and issues of public importance." The Academy itself has a distinguished history as it was founded in 1780, seven years before the US Constitution was adopted by the Constitutional Convention in Philadelphia. Among its founders were John Hancock and John Adams. The journal was founded in 1846 under the name "Proceedings of the American Academy of Arts and Sciences" and later renamed in 1958. The current issue of DAEDALUS has the theme "The Future of Free Speech."

DAEDALUS, STUDIUM GENERALE, JOSHA: these are three examples for promoting a vision of unity in a fragmented world of ideas. How does this promise hold up?

I'm afraid lately there have been two mutually opposite trends at play: one is increasing specialization of each field, the other is increasing amalgamation of their pidgin varieties in popular culture, the Media and social networking discourse.

To first address the distraction posed by specialization, even within a single field of science, the literature is so vast, the complexity of the methodology and results is so great, that no single person alive today is able to follow and understand the breadth and depth of concurrent innovations, discoveries and methodological developments. What it means is that we must rely on the accuracy of reviews, of textbook summaries, of science journalism to grasp the essence of it.

Now I come to the dumbing-down trend. Just think of the TV series "Big Bang Theory"! We are all in favor of popularization, of getting off our high horses, to leave

our ivory towers, but not at the cost of dumbing down the concepts so they become trivial or unrecognizable. Today we are exposed to the drumbeat of journalists, news show hosts and pundits that are only superficially informed about subject matters they cover with inflated authority.

I have managed to get to this point of my talk without mentioning the elephant in the room: artificial intelligence and its generative use. [To be clear, in the following I'm not referring to the areas where AI is a great blessing, such as in medical diagnostics]. This beast will gobble up the splinters of our fragmented world, digest them and reconnect them without the slightest sense of their underlying cognitive structures and historical roots. The contingency of history, the deep foundation of human culture in all its manifestations and its ethical underpinnings – all lost.

Instruction to AI program Dallee 2: "Etching of breakfast with one dog and two Siamese cats a la Hogarth" gave four solutions.

The closest we get to a metaphor for the use of AI in the generation of texts is the parrot, a bird that has developed the capacity to reproduce the cadences of human speech as a series of well-articulated sounds without the slightest idea of their meaning. Just think of a salon where humans have invited a number of parrots to join in a conversation on current literature or politics!

[I typed "AI and parrot" into Google to find out if anyone else had reflected on this similarity, and found that reality was far ahead of my thinking already: "*Parrot AI*" is the actual name of a software. Its full name is "*Parrot AI Celebrity voice generator*," and apparently it lets you impersonate any celebrity, from Albert Einstein to Whoppie Goldberg, by intonating their voice, extrapolated from ubiquitous recordings.]

It is this aspect of our present world that is most disturbing, since we are facing the emergence of a flood of *Kauderwelsch,* or gobbledygook. Such *Kauderwelsch* might indeed accomplish a synthesis of sorts, but it is a synthesis that renders the original meanings of the individual fields unrecognizable.

[Ironically, looking up the origin of the word *Kauderwelsch*, I find that it relates to the variety of the Rhaeto-Romantic language spoken in Chur in the Swiss Kanton of Graubünden. Rhaeto-Romance was a late descendant of Latin, the language of the Roman Empire in which Science, Arts and Humanities were explored and delineated with exactitude. Thus the very term Kauderwelsch, as used to denote total gibberish, carries with it the notion of a collapse of the Western culture of the classics.]

So, in facit, I count the generative use of AI as one of the dumbing-down trends, worse and potentially much more dangerous in impact than unregulated profit-driven social network platforms.

But as I near the end of my reflections I do not wish to end on a pessimistic note. Hopefully people will wake up from the giddiness produced by the endless possibilities of generative AI, and eventually come to their senses.

We need to be aware (and keep reminding ourselves) that science, the arts and humanities form a precious heritage that is freely accessible as never before. Museums, libraries, online archival repositories such as the *Gutenberg Project* are open invitations to visit and enjoy the works of art and literature first-hand. Authenticity is key in these encounters – no mediation, condensation, or intervention by punditry.

Science, unfortunately, is an exception here – most scientific articles cannot be comprehended in their original form because of their highly complex subject matters and terminology, but at least science journalism provides a bridge in overviews of the rapidly expanding areas. There are also science museums of high caliber such as the **Deutsche Museum in Munich** and the **Museum of Natural History in New York**.

I'm coming now to the conclusion by thanking Roland Mertelsmann for inspiring these thoughts, for creating his remarkable foundation for innovative methods to combat cancer, and for having the foresight to create a platform inviting interdisciplinary discourse beyond the scope of medicine.

About the Author

Joachim Frank is a Professor of the Department of Biochemistry and Molecular Biophysics, and the Department of Biological Sciences at Columbia University. He studied Physics at the University of Freiburg and received his Ph.D. from the Technical University in Munich. In 1975 he joined the Wadsworth Center in Albany as a Senior Research Scientist. In 1985, he joined the faculty of the Department of Biomedical Sciences of SUNY Albany. In 2008 he moved to New York to assume his current position. Dr. Frank's lab has developed techniques of single-particle reconstruction of biological macromolecules using the electron microscope, specializing in mathematical and computational approaches. He has applied these techniques of visualization to explore the structure and dynamics of the ribosome during the process of protein synthesis. They are now widely used to study the structure of the COVID-19 virus and other pathogens and biomolecules implicated in human diseases.

Dr. Frank is a member of the National Academy of Sciences and of the American Academy of Microbiology. He is also a fellow of the American Academy of Arts and Sciences and of the American Association for the Advancement of Science. In 2014 he was honored with the Franklin Medal for Life Science. In 2017 he shared the Wiley Prize in Biomedical Sciences with Richard Henderson and Marin van Heel. He was awarded the 2017 Nobel Prize in Chemistry together with Jacques Dubochet and Richard Henderson.