Biochimica et Biophysica Acta 1833 (2013) 954–955

Contents lists available at SciVerse ScienceDirect

Biochimica et Biophysica Acta

journal homepage: www.elsevier.com/locate/bbamcr

Coda hors concours

Ambiguity in the heart, art and science by Marcus C. Schaub

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Browsing through the articles collected in this special issue of the 7th International Ascona Workshop on Cardiomyocyte Biology, which focused on cardiac pathways of differentiation, metabolism and contraction, reveals a common notion appearing towards the end in each of them. Most material deals with basic science, but opens by mentioning the demographic socio-economic burden of high morbidity and mortality of cardiovascular diseases in technologically developed countries. Usually the circle gets closed at the end of the article. The endings are characterized by a transition from the precisely defined argumentative presentation of scientific facts to a more open not to say vague escape into speculation on "… potential opening of avenues for new therapeutic strategies". We all know the trick that is needed to land research grant support. However, such ambiguity is not only reigning in science but is also typical for the representational arts. For illustration let's start with a paradigmatic aside by viewing Henri Matisse's picture of Ikaros in the Sky (Fig. 1). The dominant feature in this picture is his radiant red heart. It may serve as a metaphor for the ambiguity in art and science.

We all know the story of Daidalos, the doyen of the Athenian craftsmanship, and his son Ikaros, who were kept captive on Kreta by the king Minos. To fly from the island Kreta, Daidalos constructed wings for his son and himself, by fixing together bird's feathers with wax. The father warned his son not to fly too high getting too close to the sun; otherwise, the sun's heat would melt the wax, loosen the feathers and cause him to fall back to earth. Ikaros, however, enjoying the newly gained freedom of flight couldn't help flying higher and higher into the sky until the unavoidable fate set in and he lost his feathers. The French painter Henri Matisse just captured this very moment of Ikaros using cutouts of colored paper (Fig. 1) when he had to give up brush painting because of severe polyarthritis.

What is Matisse showing in this cutout? Has Ikaros resigned and is falling back, or is he still struggling to gain height? He just might experience an unprecedented new feeling of elation at the very moment of absolute weightlessness before the spacecraft era. Whatever he feels, he seems to feel it by heart. Ikaros has his heart on the right spot, which is on his left; we, however, see it on the right. This is unlikely to be a medical problem; Ikaros was not reported to suffer from the Kartagener syndrome with "situs inversus" (described in 1933 by Max Kartagener, a physician from Zurich). It's more likely to be an optical gimmick. We perceive Ikaros as a mirror image as if we looked ourselves into a mirror; and what is the mirror doing? It simply reverses front and back (but neither left–right nor up–down). This reveals another ambiguity in Matisse's cutout; are we facing the front or the back of Ikaros? This again, would affect the consideration on which side he has his heart.

Fig. 1. Ikaros in the Sky. Cutout colored paper in 1943 by Henri Matisse. Published in "Jazz" by Tériade, Edition Verve, Paris, 1947.

Anyway, this perceptional aside reminds us that it is not easy to catch scientific insights in words for communication to the public, though this is part of our job. Even among us scientists, it's sometimes

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0167-4889/$ – see front matter
http://dx.doi.org/10.1016/j.bbamcr.2013.01.003

difficult to make oneself correctly understood to colleagues. In part, this may be due to the fact that information processing by the brain is done in an analog fashion. We think in pictures, enriched by memories of taste, touch, smell, hearing and so forth, not to mention the so-called "sixth sense". When it comes to formulating ideas and plans for expression and communication, we resort to language. Writing captures language for conservation and transmission. The alphabetic writing employing some twenty odd letters constitutes an efficient means for encoding complex information. With these letters, we form words and phrases according to certain rules. It works by compressing the information into a digitized form, which the listener will translate back into analog recognition. The compression into a digitized form inevitably leads to redundancies as well as to loss of details (comparable to the hereditary information encapsulated within the genetic DNA code). No wonder therefore, that we humans are struggling with our means of communication to make ourselves understood in the mundane and in the scientific life as well.

This brings us back to science and to cardiovascular science, in particular, where, besides the quantitative description of data-driven discoveries, a lot more is required to design inventive new hypothesis-driven research, including such qualities as: imagination, innovation, unconventional approaches, inspiration and exchange of ideas between the young and the more experienced elders, enthusiasm, fervor and, above all, a warm heart.