

The Perfect qMR machine: measurement variance insignificant compared to biological variance

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Below I give detail which is not available in the note. This is a fuller version of section iii) in Discussion.

iii) Inspiration and genesis.

The inspiration to move attention away from the activity of the implementation process to a higher-level (meta-) view came from Thomas Mann's book *Death in Venice* (2). The protagonist watches "the scene on the beach. .. swimmers ... children wading, others rowing ... capsizing ... animated play...". Then "his eyes wander in the sea's wide expanse .. his gaze glide[s] away [and] die[s] in the monotonous haze of this desolate emptiness". *"To rest in the arms of perfection is the desire of any man intent upon creating excellence"*.

The concept of the Perfect Machine comes from the building of the 200 inch Mount Palomar telescope, which was the most perfect telescope that could be built at the time (1933-48), and it was widely viewed on its journey to Mt. Palomar (3).

The idea of a medal to recognise and celebrate a machine that would be important for mankind came from the Longitude problem in the 18th century. Because longitude could not be measured well at sea, many lives and ships were being lost in shipwrecks. In 1714 the British parliament offered a prize of £20,000 to anyone who could solve this problem. The clockmaker John Harrison built a series of chronometers which could show Greenwich Time after long sea voyages. Parliament deferred, wanting repeatability to be established; finally King George III intervened (4).

The concept of a *transparent machine* is attractive and relevant. Our most developed machines operate reliably and without their way of functioning being apparent e.g. voltmeters, weighing machines and automatic cars. The perfect aviation machine (aeroplane) was described in 1939: *"There was a time when a flyer sat at the center of a complicated works. ... The indicators that oscillated on the instrument panel warned us of a thousand dangers. But in the machine of today we forget that motors are whirring: Thus, precisely because it is perfect the machine [hides]¹ its own existence instead of forcing itself upon our notice. And thus, also, the realities of nature resume their pride of place"* (1). Thus our attention can be entirely on our purpose, (whether to study nature or biology); the machine has become invisible.

References

1. de Saint Exupéry', A. 1939 *Wind, Sand and Stars*
2. Thomas Mann *Death in Venice*
3. Ronald Florence 1994 *The perfect machine – building the Palomar telescope*
4. Dava Sobel 2005. *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*

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¹ In the original French "La machine se dissimule".