

Preface

The suggestion to write this booklet was provoked by our article published in one of the Springer journals and describing the DNA double helix as a coding device carrying two logically distinct types of information. The idea behind this is over a decade old. In the experiments carried out in mid-1990s together with Andrew Travers and Malcolm Buckle, we stumbled over a striking phenomenon indicating that during the injection of DNA binding proteins into a flowcell with surface-immobilized DNA fragments, the DNA molecules successively adopted different dynamic configurations. These distinct configurations were directly pertinent to regulation of genetic function and thus, embodied information, but in contrast to the genetic code, this information was not discrete, but rather continuous, as it depended by large on the distribution of torsional strain in the DNA molecule. To distinguish this latter from the digital genetic code, the continuous DNA information was subsequently dubbed analog code.

In principle, the relationship between the analog and digital DNA codes is akin to the relationship between the syntax and semantics of natural language. It occurred to me that a closer examination of this remarkable similarity between the most ancient coding device and the most recently invented means of social communication was worth trying. But how can one bridge so widely disparate phenomena? It was clear from the outset that the booklet would deal with information in a most broad sense, and that the definition of the term “information” would be crucial for the entire enterprise. I took advantage of Gregory Bateson’s definition of information. In common sense, information is something that is transmitted, but Bateson maintained that for example, for the tax office an unpaid tax bill is also information, although in such a case, nothing is being transmitted.

In this booklet I argue that application of the double-coding principle of DNA information to various fields of scientific inquiry enables to relate widely disparate phenomena within a common exegetic framework, with a notable caveat that distinct types of information cannot be grasped simultaneously. This peculiarity can be fathomed by the Hindu concept of *Adhyasa*, describing oscillation of the mind due to ambiguity in identifying, whether an object on the road is a snake, or a rope. This phenomenon of oscillation of our perception obtains a deeper meaning with

examples from natural science and especially, the indeterminacy principle of quantum physics. In all such cases one inference excludes the other, and this has in turn a genuine similarity to the problems caused by logical paradoxes. And as I try to show in this booklet, all this has something to do with our perception of time.

In a nutshell, this booklet is an attempt to show that the basic device of creating information in the living world, including our perception and social communication, is already provided in structural organisation of the DNA molecule, which alike the human mind, has a property of both, distinctness and wholeness to it. I surmise that it is this highly elaborate double coding mechanism with two structurally coupled codes mutually determining each other, which provides for the wholeness that no artificial device can ever attain.

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Bremen

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