

Dreams and reality featured as complex numbers

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In mathematics exist numbers called **complex numbers**. The form of a complex number is

$$a + bi$$

where a and b are real numbers, and i is the imaginary unit. This imaginary unit has the property $i^2 = -1$. The real number a is called the **real part** of the complex number, and the real number b is the **imaginary part**.

Let's pay attention to the following implication: **real** numbers may be considered to be **complex numbers with an imaginary part of zero** (i.e. the real number a is equivalent to the complex number $a+0i$).

Why, in order to discuss about dreams, do we start with this inroad in the realm of mathematics?

Just a minute more to remember that complex numbers are absolutely relevant in mathematical formulation of quantum mechanics.

If we assume, like Eccles did, that the order of magnitude of mental phenomena is very little, quantum's metaphors result convenient to describe them.

So we can put on a series of analogies.

1. Our experience of reality may always be described as a complex number. There's a part coming from objective reality "out there" and a part coming from realm of fantasy, individual and collective. Or, more precisely, this last is composed by fantasy and memory, which are always together.
2. Only with a formalism, but never in practice, we may separate these two parts. We always, even in deep states of regression, experience a

continuum.

3. While we are dreaming, the real part, represented mostly by memory, is reduced to the least. Fantasy prevails and the motory output is almost completely disconnected. While we are awake, through sensory input, the real part is overcoming and a surplus of organization is necessary in order to steer our behavior. This is provided by the most evolved structures of the brain. We elaborate a logical and rational view of ourselves and of the world, based upon the separation subject-object. Since we developed logical thinking, we expanded ourselves in the environment, in time and space. Our ability of manipulate what we perceive as external world has incredibly increased.
4. This passage requires a leap of order of magnitude, like the one from quantum's physics to classical physics. In quantum's physics reality may be virtual and undetermined. In classical physics objects are locally definite, and quantities are completely determined. Many scientist invoke, to justify this leap, the principle of decoherence. Decoherence is due to a massive interaction with environment.
5. It does not means that quantum phenomena desappear or are less important... they are simply hidden. In a similar way, people entangled into practical problems of everyday life, or difficult relationships, or emotional problems, try to find a way of solution in the macroscopic realm of what is perceived as real. Trying again and again very often they experience disappointment and despair, because it looks like that reality is hostile or they are inexorably unfit.
6. As pychotherapists we claim that solution is always "in the other part of the number" or, better, **in the relationship between** the real part and the imaginary part of the number

Plato affirmed that we are like God's toys and we are committed to play the most beatiful games. Since I consider reality as a sacred thing, I think I'm not disrepectful if I say that reality is our toy. The problem is never in the toy, rather in the way we play and we handle the toy.

As mankind has always known, and Freud repropesed in positivist words, dream is the "royal road" to discover how we are playing the game, and also to invent new metaphors and new ways to play it better.

Following the different schools of interpretation dreams reveal the imaginary part of the number. When we work with dreams we put up a **virtual** set. Virtual does not mean unreal at all. It means real but not yet determined. In this state we feel a temporary **bewilderment**, which is the experience of the

many, perhaps infinite possibilities we have to make a connection between

- **objective reality**
- **hereditary parts of our fantasy** (fixed and unvariable)
- **creative parts of our fantasy**

But the work goes on beyond this virtual set.

In a former writing (O divina bellezza, o meraviglia – 2002) I've already used metaphors from quantum physics. I featured the non local phenomena that occur in psychotherapy as similar to entanglement of particles (which does not interest here), and the passage from undetermination of a subject to a determinate way of existence, due to relationship with others, as similar to "the collapse of wave function". The wave function describes the virtual reality of a particle as a "wave of probability". When you realize the measurement, the **virtual** particle becomes **actualized** in a well determined way.

Following metaphors of quantum theory, we can say that by the **actions** we accomplish in our relational world, and by **exposing ourselves** to other people's looks, our "wave function" collapses and we are subject to decoherence... in other words, we change.

This is one of the reasons why relational therapies are often very powerful. In some way, "the imaginary part of the number" is revealed and, in the same context, actions and looks occur giving room to massive phenomena of "wave function collapse" and decoherence.

I think that quantum mechanics offers suitable theoretical metaphors to psychotherapy. Now we are challenged to match richness of dreams and power of relationship in simple and efficacious form of intervention.

This is consistent with the unforgettable statement of Francesco Mina:

"It is specific of the man being a poetic animal more than a rational animal"

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