

GROWTH NOT ONLY BY INCREASE: LESSONS FROM THE EMBRYO
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I am amongst others embryologist. **As an embryologist** I am of course quite familiar with the phenomena of growth and development. But what could the embryo teach us about growth? The **growth in an embryo is nearly explosive and exponential**. In the first five months of your life your body length increases per month by the quadrate: $(1)1^2$, $(4)2^2$, $(9)3^2$, $(16)4^2$, $(25)5^2$ centimeters. When you grow your brain, that happens (they estimate) with 4000 so-called “divisions” per second. The **numbers** of embryonic growth are incredible! **But quantitative notions may obscure** what biological growth and development really is.

Wat did you do as embryo? “Nothing?” Just growing, nothing but genes, cells, tissues? Maybe it has been told to you that you once started as a cell, and that your body is the result of the growing of billions of cells. That is not what I see happening in an embryo: **You do not start as a cell**. The egg cell is a cell. A particle of life, coming forth from the body of mother. When the egg cell is “fertilized”, it transforms into something else: a *zygote*. **A zygote is not a cell but an organism**, a whole, therefore a body, a unicellular body. And this body is subdivided, suborganized in cells. In my view cells do not divide; cells multiply, that is their basic power, they reproduce, multiply. This means to me that the body is not the result or summation of a nearly infinite number of cell divisions but that **you start as a body**, and that you are body from the very beginning on.

Maybe the body is not what you think – anatomy, space - but a **performance**. Let me explain. If you think that you started as a cell, yes, then you are a product of cell growth and cell multiplication and tissue growth. First your body and next you “came out of that”. Cells produce bodies, bodies, brains and with them minds. Is this the only possible view?

Are you still thinking that you were **made**? By the fusion of a sperm cell with an egg? In a womb or in a tube? Do you still think that your life started at birth and that before that moment you were just not yet ready? Do you know that one also may read from the embryonic facts that you **do not come from your parents but through them**? That actually “**YOU** made your body, cell by cell you made it”? Do you know that this latter is not just a quote from Rumi, a 13th century philosopher, but in fact can be phenomenologically well demonstrated, amongst others by the fact that you are born by dying out of your so-called placenta which actually is your main prenatal body? That your biography and therefore your experiencing starts nine months before your birth? What did **YOU** do as an embryo? Answers to questions like those can be found on www.embryo.nl, website of the embryo.

When I consider what for example happens in **the first week** of your life, I rather see a kind of “body division”, not “cell-division”: the body is sub-divided, sub-organized into cells and via those cells in organs and tissues. The whole first week **no physical growth**. At the end (*blastula, pointing at slide*) there appears a center body, now sitting in the chair, plus an ‘outer’ placenta-body with which you live till birth. For constituting its body in different parts and organs, an organism certainly needs the constantly present power of cells to multiply and to reproduce. But an embryo, a living organism, apparently **organizes / orchestrates this cell power**. It is not the result of it. Differentiation of your body in parts and organs **goes from “outside” to “inside”** not the reverse. Your body is not the result, not the summation of cells and parts. **You are not built up from cells and organs**. That is a “logical error”.

Yes, there is a domain in nature where growth seems synonymous with multiplication by means of cloning and repetition of particles. The so-called “dead matter” is built up from particles as brick stones”. The crystal can grow just by adding another crystal, another element. Cloning. Particles. This principle also is true on the level of the cells. In that domain the particle and multiplication rules. **The cell** therefore might then be an important particle of life, **it is not the entity of life! The entity of life is the organism**, the whole, the living body.

There are no Jaap-van-der-Wal-particles or rose-molecules from which you can constitute a living being. The **growing** of an embryo **includes orchestration and organization** of the quantities of cells, growing therefore is not the reproduction of elements and units, growing is keeping in order, is maintenance of individuality and entirety. In a living organism the particles (the **Many**) as well as the whole (the **One**) are **both** essential.

Because many if not most people nowadays still think that our **body is a result of our growth** and development and that growth so to say results in the so-called adult body, many people think that an embryo, or a fetus, or a child may be considered as “not ready yet”. This again is a misleading notion. **Living organisms, the entities of life, appear and emerge in time.** The living organism is a continuous process of growth and development and maybe gradually becomes stabilized, in balance, but never “ready”. Living beings are continuously **becoming**. Therefore, in my view, phases of that development can never be considered as “not yet complete”: also, an embryo is a wonder of fitting between form, function and environment, which is the most simple definition of a living organism. In living nature every phase counts. **Organisms are processes**, lifelong performances, so to say.

Sometimes however in living organisms the reproductive growth, the growth of multiplication of cells threatens to take over. That is the process of **cancer**. It is pathology for living organisms to grow like cells: cancer is uncontrolled and limitless growth resulting in disorganization. Normal healthy biological growth is not simply a quantitative reality, it also implies the quality of organization and orchestration of that growth.

It is my conviction that if we want to organize our societies, our families our institutions and companies, **we may learn the patterns** for that from living organisms. For example, it nowadays is important for us to learn that **economic growth is not similar to ecological growth**. We however still go with thinking that growing is like expansion and multiplication, is “more of the same”. One of the theses of my dissertation (1988) was: “*The common curves and diagrams that are applied to describe the economic growth in Western countries, too poorly expresses the malignant character of those growth processes*”. Since then we have seen an enormous growth of populations, of economies on this planet. **But is ‘growth’ the right notion for that?** Is this type of growth a normal or a healthy process? When in 2004 ten more countries were admitted to the European Union, did that mean that the EU was growing? Quantitatively yes. But qualitatively? Also yes?

The philosopher Nietzsche said: Health is not simply the absence of handicap or disease, but **Health is integration and disease is disintegration**. This implies that you can be healthy although impaired, although ill, although restricted and even although mortal. Restrictions may function as resistances against which you perform your integration. So it might be with growth. In a healthy growth there exists an **integrative balance between the two opposite principles** of growth of cells and performance of the organism. On the one hand that enormous chaotic power of cell multiplications, that biological power that you need as a condition to grow, but on the other hand the control of that chaos by the morphogenetic and epigenetic orchestration in order to organize your organism as an entirety, as a whole. Our models for economic and social growth will never become ecological, and therefore healthy, if we go on thinking that we started as a cell and that growth is a quantitative thing.

A change of mind could be that we stop with our sometimes nearly absolute belief in the billions, the quantities, the manifold that also constitute our reality. That we instead, as a kind of healing, also take into consideration the **ONE** as a fundament of our reality, the Whole as what keeps the many together. **The largest number of the universe is ONE**. Not the one mankind or the one planet as a product of the many but the One as integration and achievement by the Many. That is at least what I also learned from the embryo: Not “**out of the many to One**” but “**in manifoldness and diversity striving to be one**”. Growth implies

restriction and moderation, as well as variety and diversity. **Healthy growth is not “more of the same”**. The worst parameters for a healthy growth are quantitative statistics.

Thank you for listening to the embryo, of course as interpreted by Jaap van der Wal. **Not the Many is good, but the Good is manifold. And “more” is, just like “better,” the enemy of good.** And you? You still are an embryo, performing your biography, in mind and body. Of which there is only ONE and that started not at birth but on first day of your life.