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Circulation from perspective of constitutional elements

According to the conventional model the heart is a pump which, by generating pressure between the arterial and venous sides of the heart, pushes the blood around the systemic and pulmonary circulation. The conception of this model can be traced to 16th and 17th century iatromedicine when attempts were made to explain the workings of the human body on the basis of newly discovered natural laws. With rapid expansion of experimental methods in the mid 19th century the need arose to remove traces of vitalism from biology and medicine, formulate them on a physical-chemical basis and thus elevate them to the rank of “exact” sciences, such as that of chemistry and physics.

The fundamental problem with the conventional interpretation of the circulation is that it is based on a *mechanistic model* which does not correspond to the observed phenomena. Due to increased specialization in the basic and clinical sciences, the overview has been lost and such phenomena often remain unnoticed. Recently, a number of these observations have been gathered and published in a book (The heart and Circulation, an Integrative Model, Springer, 2014). Collectively, they expose the inconsistencies of the pressure-propulsion model. Well over a century ago R. Steiner proposed an alternative explanation of the circulation. According to Steiner the blood is an autonomously moving organ and the heart functions as an organ of restraint, rhythmically interrupting the flow of blood. This radically different interpretation of circulation not only confirms the observed phenomena, but also raises a number of questions, such as the applicability and interpretation of standard cardiovascular parameters, i.e. the arterial pressure and cardiac output, in the overall understanding of the cardiovascular system (CVS).

The understanding of circulation, like that of any other organ systems, can be interpreted according to the four- fold constitutional elements. It arises organically from the evolutionary development of the CVS. It is important to understand that the inside of the human being is not simply a continuation of the outside world and its forces, but constitutes a microcosm with its own lawfulness.

Movement of saps in the plant is the most basic example of “circulation”, but even this cannot be explained on account of the physical (centric) forces alone. While it is conceivable that saps move downward with gravity, their ascent is yet to be explained. Here, the forces of the

periphery, or the etheric forces are at work. Physically, their sum-total can be measured as negative pressure or suction.

In the case of human/animal circulation the physical forces, such as gravitational acceleration, likewise has a definite effect on the CVS – it tends to pool the blood in the lower part of the body in an upright standing individual. The movement of the bodily fluids is an expression of the “etheric”, of the ether body. The open lymphatic system remotely corresponds to the plant circulation in animals. Exposure to microgravity (e.g., in a space station) is an effective way of demonstrating the presence of “etheric” forces, unmediated by gravity. Immersion in water can achieve a similar effect.

The etheric forces develop maximal activity in specialized conduits – the blood vessels. (The hollow spaces in the blood vessels are not a regular, but a counter-space.) The center of this activity manifests differently in the head, the chest and in the limb-metabolic system. In the head, the brain floats in the “interstitial fluid” (the CSF) and is taken “out of gravity”. In the chest (the middle or rhythmic system) the etheric forces are the strongest in the heart and its chambers. Negative intrapleural pressure, essential for expansion of the lung, is likewise the signature of the etheric. (Mechanistic explanation as to why the lungs stay expanded needs to be corrected!) Outside of the blood vessels, the etheric forces manifest as negative tissue pressure, well documented in physiology (Guyton). They keep the tissues “dry”. Congestive heart failure (with peripheral, dependent edema) is a sign of weakening etheric with predominance of the earthly (physical) forces. The direction of etheric forces is towards the heart – hence, all (venous) blood wants to return to the heart (as DaVinci already observed). This is the real explanation for Guyton’s “venous return” model. It is based on the genuine phenomenon.

The predominantly venous circulation in gill-breathing, cold-blood, aquatic animals corresponds to “free flow” of etheric forces. With transition to air breathing, first apparent in amphibians, a new organ, the lung, develops together with the left atrium and the pulmonary circulation. Complete adaptation to air-breathing in warm-blooded mammals parallels higher metabolic demands and oxygen consumption together with more efficient and responsive CVS. The rhythm of breathing is the hallmark of the animal’s connection with its cosmic/earthly environment. Each species has a characteristic heart/respiratory ratio. “Aeration” of the organism is the process of ensoulment, its astralization (*anima*-lization, or *ensoulment*). There is a complete separation of arterial and venous bloods and the emergence of a thick, muscular left ventricle ejecting the blood into the high-pressure arterial compartment. High pressure in the arteries represents an “overfilling” with the blood in comparison to the low-pressure venous system. (an enhancement, in the Goethean sense). It can be seen as the “inner atmosphere”. Higher metabolic rates which maintain a constant inner thermal environment, and refinement of the senses and of the central nervous system are needed to support higher levels of *consciousness* in warm-blooded mammals.

Thus, the “watershed” between the etheric and astral forces is at the level of the capillaries, where the centrifugal forces “end” and the etheric or sectional forces have their “beginning”.

Hence so much talk about the microcirculation, the “great new frontier” of circulation research, as I call it.

The highest level of metamorphosis of the CVS occurs in the human being. Vertical orientation of the CVS, together with sophisticated neuro-humoral and baroreceptor control of blood pressure, is a specifically human adaptation. The blood now becomes the singular organ of the ego-organization – the agent of transformation of other bodily members – and the bearer of explicitly human traits of self-consciousness, speech and memory.