

Epiloog: kolm pööret

Kogunud Lauri Laanisto ja Kalevi Kull

I pööre – Aristoteles (384-322 emal)

Aristoteles „De generatione animalium“, väljaandest „The Works of Aristotle. Volume V“ University of Oxford, Oxford, 1912, lk 734^a

Now it would appear irrational to suppose that any of either the internal organs or the other parts is made by something external, since one thing cannot set up a motion in another without touching it, nor can a thing be affected in any way by another if it does not set up a motion in it. Something then of the sort we require exists in the embryo itself, being either a part of it or separate from it. To suppose that it should be something else separate from it is irrational. For after the animal has been produced does this something perish or does it remain in it? But nothing of the kind appears to be in it, nothing which is not a part of the whole plant or animal. Yet, on the other hand, it is absurd to say that it perishes after making either all the parts or only some of them. If it makes some of the parts and then perishes, what is to make the rest of them? Suppose this something makes the heart and then perishes, and the heart makes another organ, by the same argument either all the parts must perish or all must remain. Therefore it is preserved and does not perish. Therefore it is a part of the embryo itself which exists in the semen from the beginning; and if indeed there is no part of the soul which does not

exist in some part of the body, it would also be a part containing soul in it from the beginning.

How, then, does it make the other parts? Either all the parts, as heart, lung, liver, eye, and all the rest, come into being together or in succession, as is said in the verse ascribed to Orpheus, for there he says that an animal comes into being in the same way as the knitting of a net. That the former is not the fact is plain even to the senses, for some of the parts are clearly visible as already existing in the embryo while others are not; that it is not because of their being too small that they are not visible is clear, for the lung is of greater size than the heart, and yet appears later than the heart in the original development. Since, then, one is earlier and another later, does the one make the other, and does the later part exist on account of the part which is next to it, or rather does the one come into being only after the other? I mean, for instance, that it is not the fact that the heart, having come into being first, then makes the liver, and the liver again another organ, but that the liver only comes into being after the heart, and not by the agency of the heart, as a man becomes a man after being a boy, not by his agency. An explanation of this is that, in all the productions of Nature or of art, what already exists potentially is brought into being only by what exists actually; therefore if one organ formed another the form and the character of the later organ would have to exist in the earlier, e.g. the form of the liver in the heart. And otherwise also the theory is strange and fictitious.

Yet again, if the whole animal or plant is formed from semen or seed, it is impossible that any part of it should exist ready made in the semen or seed, whether that part be able to make the other parts or no. For it is plain that, if it exists in it from the first, it was made by that which made the semen. But semen must be made first, and that is the function of the generating parent. So, then, it is

not possible that any part should exist in it, and therefore it has not within itself that which makes the parts.

II pööre - William Harvey (1578-1657)

William Harvey „Exercitationes de generatione animalium“ [1651],
väljaandest „The Works of William Harvey, M.D.“ The
Syndenham Society, London, 1847, lk 334-335

Some, out of a material previously concocted, and that has already attained its bulk, receive their forms and transfigurations ; and all their parts are fashioned simultaneously, each with its distinctive characteristic, by the process called metamorphosis, and in this way a perfect animal is at once born ; on the other hand, there are some in which one part is made before another, and then from the same material, afterwards receive at once nutrition, bulk, and form : that is to say, they have some parts made before, some after others, and these are at the same time increased in size and altered in form. The structure of these animals commences from some one part as its nucleus and origin, by the instrumentality of which the rest of the limbs are joined on, and this we say takes place by the method of epigenesis, namely, by degrees, part after part ; and this is, in preference to the other mode, generation properly so called.

In the former of the ways mentioned, the generation of insects is effected where by metamorphosis a worm is born from an egg ; or out of a putrescent material, the drying of a moist substance or the moistening of a dry one, rudiments are created, from which, as from a caterpillar grown to its full size, or from an aurelia, springs a butterfly or fly already of a proper size, which never attains to any larger growth after it is first born ; this is called metamorphosis. But the more perfect animals with red blood are made by epigenesis, or the superaddition of parts. In the former, chance or hazard seems the

principal promoter of generation, and there, the form is due to the potency of a preexisting material; and the first cause of generation is 'matter,' rather than 'an external efficient;' whence it happens too that these animals are less perfect, less preservative of their own races, and less abiding, than the red-blooded terrestrial or aquatic animals, which owe their immortality to one constant source, viz. the perpetuation of the same species; of this circumstance we assign the first cause to nature and the vegetative faculty.

Some animals then are born of their own accord, concocted out of matter spontaneously, or by chance, as Aristotle seems to assert, when he speaks of animals whose matter is capable of receiving an impulse from itself, viz. the same impulse given by hazard, as is attributable to the seed, in the generation of other animals. And the same thing happens in art, as in the generation of animals. Some things, which are the result of art, are so likewise of chance, as good health; others always owe their existence to art; for instance, a house. Bees, wasps, butterflies, and whatever is generated from caterpillars by metamorphosis, are said to have sprung from chance, and therefore to be not preservative of their own race; the contrary is the case with the lion and the cock; they owe their existence as it were to nature or an operative faculty of a divine quality, and require for their propagation an identity of species, rather than any supply of fitting material.

III pööre – Karl Ernst von Baer (1792-1876)

Karl Ernst von Baer „Über Entwicklungsgeschichte der Thiere“ [1828], teosest Valt, Maie „K. E. v. Baer ja darvinism: Etüüd arenguideede draamast bioloogias“ Valgus, Tallinn, 1977, lk 31-34

Baeri seadused ehk Baeri reeglid on organismide arengu üldised seaduspärad, sõnastatud Karl Ernst von Baeri poolt 1828. a.:

(1) *embrüonaalse arengu jooksul moodustuvad esialgu üldised, suurele loomagrupile ühised ja samaaegselt embrüonaalse ehituse poolest lihtsad morfoloogilised tunnused; edasise arengu käigus jätkub esmaste algmete diferentseerumine, ühtlasi kujunevad nõnda järk-järgult välja antud loomagrupi alagruppide eritunnused;*

(2) *embrüonaalse arengu jooksul tekivad embrüol nende taksonoomiliste grupeeringute konkreetsed tunnused, millesse ta kuulub; embrüo ei läbi arenguteel teiste taksonoomiliste vormide seisundeid;*

(3) *kõrgemate loomade embrüod ei sarnane arengu jooksul teiste madalamate täiskasvanud loomadega, vaid hoopis nende loodetega.*