



Perennials

Part I

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Perennials

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Upcoming parts:

Part II

- The importance of perennials in the full design of a forgotten agro-eco-system.
- Complex and stratified consortiums of annuals, developed and used by our ancestors in their sophisticated systems of crop rotation.
- The integration of those annuals in the frame-work made up by perennials.
- Pear-, ash- and poplar-trees, willows etc. + winter-grains or potatoes.
- How to turn the cultivation of potatoes into a perennial operation, achieving high productivity without the use of fertilizers and without the need to control pests and diseases.

Part III

- Steps towards the reintegration of perennials in our mechanized modern agriculture.
- Urgent need for the design and the construction of machines and implements which could fit into our goal.
- Optimizing of our operations by using beneficial effects, achieved by an intelligent employment of mycorrhizae.

Part IV

- Outlook into a - possible - future.
- Peace-farming.
- Man redesigned to nature.
- Return to the Paradise.

Foreword

The idea of the following reflections occurred out of a small request made to me by a friend of mine, Felipe Pasini, concerning perennials in our diet.

At first glance, it is an issue of minor importance. But when I began to look at it more closely, seeing the direct and indirect ecological-, social- and economic impact, caused by what people eat and ate in different epochs, things have changed: Upon thinking about what we eat nowadays, and comparing this, to what had been common to me, as an individual some 70 years ago, in my childhood, pondering about what was consumed in our small farmer's family, living in the north-east of Switzerland, I was astonished, and came to the conclusion, that our change of habits in terms of alimentation, since the middle of the last century, in the industrialized economies of the north first, and later on worldwide, has turned itself into something more than only a minor detail.

Our shift from a strongly perennial-based diet, directly and indirectly*, to our actual modern alimentation, relied, and dependent predominantly on 4 annual crops (wheat, rice, corn, soya-beans), looking at it from many aspects, perhaps should become, - could become - subject of a thoughtful consideration.

Could? or should? - According to our desire in terms of quality of life -. This latter one, (quality of life,), even more, considering that the change of habits concerning our diet, strongly is being subject to the allegiance dynamic of the essence of an old roman proverb, which says: "You are, what you eat!"

In so far, what had seemed to be a minor detail, became dominant and took over: The [initial] transformer [man], at the end became, - turned to be - the transformed.

PART I

PERENNIALS LOOKED AT IN THE HISTORICAL AND CULTURAL CONTEXT OF THE REGION I GREW UP

One time, it is not more than two and a half centuries ago, the agriculture of our ancestors was anchored in perennials, and dominated by perennials. Their whole agro-eco-systems were driven by the dynamics, they achieved by annual pruning of their complex and intelligently arranged multistorey-systems. Perennials also were main source of aliments.

Even for us, indirect descendants of those former ones, nearly two hundred years later, up to the first decade of my life, perennials summed up the biggest share of our day-to-day menus.

Still in the beginning of the fifties of the last century, there had remained left overs, though only some few ones, but, as I will show in this paper, decisive remnants of the fundament to an enormous wealth, which our former ones had built up during hundreds of years: All indicates, that those were quite a bit different to the concept, we had been taught in our lessons of history, classifying them as poor, materially, and simple-minded bumpkins:

- They lived a modest-, but decent life,
- needed no help to raise and educate their children,
- created infinitive savings in terms of complex, for centuries lasting plantations of perennials.
- They had built up a solid, extremely well-functioning infrastructure and a strong cultural fundament.

And then, additionally, passed big parts of all that treasure, solidified, in form of an impressive material- and cultural heritage to future generations:

- They had the spirit and the knowledge to plant orchards, which 2 or 3 centuries later still were producing enormous amounts of most diverse- and best quality fruits.

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- And they also had spare time, craftsmanship and the material conditions, to design and to construct houses and barns, which lasted for centuries: finest homesteads made out of best material.

(I have grown up in one of these houses). And - thinking, that the small estate of my parents, (approx. 4 hectares), was the same and of the same size as it was 250 years earlier, when that house had been constructed and payed out of the 'profit' of the 'operation agriculture' on those 4 hectare by some predecessors of us, perhaps we should try to “change or glasses”, while looking at them and their epoch. This could result, that we would perceive their world a little bit more based upon facts, instead upon beliefs, [which by its side could become a subject of an interesting study].)



FACTS

Many rest overs of the original design to the agricultural landscape created by those ancestors, still were present at the time I grew up in the mid of the last century. By themselves they told a history, their history:

- More than half of the cultivated areas were organized in narrow stripes. And those stripes (according to the oldest man of our community), "all those, formerly were subdivided by hedges (until the end of world-war I), and on hilly parts terraced - even on only gently sloped spots".
- In fact, there were still terraces in some few parts. They had a width of 20 to 30 meters, and on some spots with a row of old fruit trees in their middle, (pear-, apple- or cherry trees), every 10 to 15 meter one. *

Account of some elders referring themselves to those old trees: "Those ones had been planted in the 'Landknechtszeit'*"*

***Before the French Revolution, at a time, when our formers were, so called 'tied' to their land, 'Landknechte'.*

- In a few recesses still existed some survivals of hedges between the terraces. Notable was the diversity of planted species and the number of varieties of those latter ones. And an additional, very interesting aspect of them was, that, despite of their diversity in terms of employed species and arrangement of these ones between them, peculiar for each situation, they all had in common an accentuated functionality: Eco-physiologically, and also regarding their economic potential. They all followed a clear and extremely functional pattern. This turns to be understandable, when we try to look at the subject, considering the resources, those ancestors had, and also the political and social context in which they lived:
- The areas available to them, of potentially to be cultivated land, were small and limited.

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- They were 'tied' to that, 'their' land, and
- The biggest and nearly only one, [but unique!] external input they had, in order to produce on their land what they needed, was their knowledge. And that latter one, professional skill - all indicates - they had.

(And they cared for that knowledge, knew to apply it, always proudly perfecting and increasing it, while creatively, and - moved by their inner pleasure*- carrying out their daily jobs.) And, additionally, they achieved to potentialize the different contributing factors by:

- a) Choosing for consortiums of species to be planted, which best would combine -, respectively, could fit into the given natural conditions of each site.
- b) All indicates, that they included in their calculus for their choice, in terms of species to be planted, also the potentials, they would gain, as positive side-effects of their [by them foreseen] management of the systems.
- c) They never would have forgotten to consider and to optimize in their design for their hedges, to include also the direct economic potential which each species, or consortiums of different ones, could bring to them. [Edible fruits, nuts, fodder for their livestock etc.]

To fit all those details, partly referred to above, like pieces of a big puzzle, together, and then the whole complex combined, put in practice, by its side, presupposes a considerable degree of accumulated capital in terms of knowledge, professional skill and acquired experience. Know-how, resulting out of great and versatile personal practice and capacity of observation, combined with a good portion of mental ability to translate the totality of all that, by generations elaborated treasure, into their daily practice as farmer, in a way, which would create the necessary preconditions to obtain, day after day, year after year, generation after generation, all they needed. But not only that: They went a step further, in the sense of that

- they also obtained to design and to realize their operation in a way, to be a joyful and compensatory activity for them, technically and economically.

And by the way,

- they achieved to build up a harmoniously functioning social network between them, as a community of farmers, as well as to create and to maintain good functioning relations with the rest of their human environment. They needed no police to protect themselves from their neighbours, prisons to lock away members of them, difficult to be handle, nor 'asylums' to receive and 'care for' of their old aged- and 'un-normal' ones.
- Wisely they treated the ecosystems, in which they lived and intervened, with love and inward esteem.

[This latter aspect of their culture had its expression in many of their most appreciated, tunefully and harmoniously sung and cared for songs, addressing with gratitude their beloved home and mother earth. Peculiar each one of those, special and different for each daily, seasonal and yearly event. Sung solo, in duet, in three or four voices, according to content and purpose addressed to. Nearly everybody participated, was member of one or more, of 'his' choir(s), beginning from the very first ones at school, at the age of six to seven years. A great event was the moment, at fourteen to sixteen years of age, when their adolescents could enter into a four to six-voice choir!]

Furthermore, time for them was not money. Looking at them, at what they did, and the way they did it, we will come to the conclusion, that time by them was considered, to be an opportunity for them, to be useful, serviceable, to fulfil their function. Or, with other words, they didn't do their tasks autistically, trying with expertise to achieve first of all personal advantages, as it is common nowadays, and, they didn't do things for money. And much less even, they could have imagined to consider money as an equivalent to happiness. Our modern slogan "time is money" was inexistent to them. The hypothesis only, to adapt themselves to something like this as guideline for their daily activities and life, probably would have been considered by them as an absurdity, a grave error. Let us tell as a 'sin'. That latter term, by its side, had to them a strong connotation of 'untying oneself from the center'. They acted timelessly, in good hands of the continuum, upon-, and in the street of time.

*Concerning this latter issue, let us listen to two of our ancestors, who, by themselves lived in different epochs and in dissimilar cultural contexts. First the older one: “Things are not to be done; they are being done.” (Lao Tsê , 700 years b.C.). ‘Being done’, moved, motivated to do the tasks to be realized by inner pleasure. Presupposed by him, Lao Tsê, that each individual of all species occurs, equipped to realize its peculiar tasks and to fulfill its function, so as that act of realizing, being realized, will happen ‘moved by inner pleasure’. He, the individual does it joyfully, driven by his inner motor. That ‘being done, therefore, is not laziness; it is ‘fulfilling his function’ with pleasure and enthusiasm, realizing his life-project! Occurred, let us say, - occurring each individual - will occur - to do it. And equipped to do it.

The content of the saying of the second author, I will cite, is undeviatingly connected with our issue, and can give us a help to comprehend the fundamental principle, upon they, (those, our ancestors) proceeded , and the idea, on which the design for their agro-eco-systems was based: ”And if I would know, that I will die tomorrow, today still, I would plant an apple tree.*” (Martin Luther, 1483 - 1546 a.C.)

Trees, at that time, usually were planted by the use of the method of ‘direct seed’, putting into the earth on the chosen spot several seeds of different genotypes of the same (opted for) species, and those together with seeds or rhizomes of other species, which they knew, that they would ‘nurse’ their opted-for ones. This, modestly, is what nature has developed and chosen for, in the course of its ongoing evolutionary processes, to perform in the most efficient way the indispensable, periodically to be realized, regeneration of (nearly) all its eco-systems. This strategy put in practice, turns itself into something like a guaranty, to get established (at extremely low costs) the, (our) foreseen, wanted species. And, having done it, and then once established our new plants, gives us the privilege to receive as an additional premium, the chance to choose later on for the best adapted genotypes to the given conditions: Vigorous and healthy plants, with a strong root-system. Precondition, by its side, to attain potentially productive and long-living individuals.



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* Planted directly into the field by seeds, for apple-, pear-, plum trees etc, will take between five to twenty years to harvest their first fruits. Time needed, opportunity to enable, to allow our young plant, to create its necessary fundament in terms of a strong root system, favourable soil conditions in cooperation with countless members of the micro-flora and -fauna of the soil, and to build up, together with hundreds to thousands of species and myriads of individuals of bacteria and fungi an efficient network of mycorrhiza to produce afterwards, during centuries enormous quantities of sacred food.



Following our actually usual and recommended standards, we plant our apple trees and most of our other fruit tree species grafted upon cuttings, clone upon clone, normally in monoculture. Then trim them, to produce the maximum possible of fruits from the second year onwards, and... remove them, pull them out of the earth, when they - after a few years of painfully giving their poor-quality fruits - enter in collapse.

And they do this [entering in collapse], despite of the fact that we administer, from the beginning on of our operation, until their entering in collapse, the use of the whole arsenal of available technical tricks to make-, to let them grow without being bothered by hungry competitors, and despite of the fact too, of having had applied, conscientiously and technically correct, all the foreseen, and for this purpose recommended, chemical and biological weapons in order to eliminate whatever pests and diseases, which could attack them.

We insistently are trying to maximize our part, ignoring, that we are cells only of one great macro-organism, called 'Planet Earth', endobionts of the eco-systems where we live and interact. We are subject to the laws according to which that macro organism, our universe, functions. We call them 'natural laws'. One of these laws of nature says, that:

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"A non-harmonious interference of parts, which constitute a macro-organism, induces modifications in that former one in a way, so that a further presence of the emitters of those (dis-harmonious) interferences turns to be non-opportune". (15th principle of the 'TAO for our comprehension of life. Ernst Götsch, 2019)

We inescapably are subject to the laws of nature, also to this latter one. We are part of an intelligent system, and not the intelligent ones.

Acting, however, in the way, as those our former ones did, could be described as a strategy adopted by them, to optimize all decisive contributing factors:

- To follow strategies, developed and tested by nature during its nearly four billion years of existence, and employed in all its acts of regeneration.
- To include in their design the positive side-effects, they would achieve out of the by them foreseen management of their agro-eco-systems.
- To achieve what they needed at low costs materially, for themselves, as well as for the Planet.
- To get by an intelligent employment of the resources, available to them, positive side-effects, which together, turned their contribution to result in a positive balance energetically and also in terms established life.
- They achieved to act, to intervene in the eco- system, in a way, so that their contribution would be serviceably useful to that latter one, and by this way [they] becoming 'wanted beings', for and on the place, where they lived.
- All that summed up, and pointed at above, integrated in their being, brought them to that privileged way of acting, to acquire what they needed to satisfy their metabolism by the 'being done

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by inner pleasure', [and not, as quite usual today, 'jobbing', in order to get money].

We could tell, that most parts of their interaction as farmers in the eco-system submitted to their activities were very much in harmony with-, and driven by the dynamics of natural species succession. And more even: They attained to potentialize the benefits of the ongoing of these processes [natural species succession] to a considerable extent by what they did, how they did it, and the moment during the year, they would do it, in terms of regularly annual pruning of the - by them chosen and generously included - tree- and bush vegetation, as well as of many elements of the perennial herbaceous- and grass-vegetation into their agro-eco-systems.



The inner organization of their agro-eco-systems fit perfectly - as I will show later on - in what has been told above. But first, let us have a look at those above pointed-at aspects. At least let us try to see the key-function of those, in order to understand their importance:

On sunny spots, for example, they used to plant - concerning bush- and tree species - in their hedges, an immense diversity of species and varieties of stone fruits. Many of them, nearly every year, were loaded with fruits. The few ones, which still had rest over unto the mid the last century in the region, I grew up, mostly were no more cultivated, old varieties.

There, for example, stood in the orchard of our next neighbor, densely planted in one row and spaced between them, one and a half to two meters from one to the other, a group, composed of two genotypes of old trees. They all had a thick, scarred root-stock. It was a variety of 'mirabelles', popularly called "Pflümli". Yellow ones, and blue ones, with tiny, spheric fruits, not bigger than small, cultivated cherries. These used to ripen between end of June and early July. Their - also spheric in shape - stone-seeds were smaller than those ones of cherries of the same size. Those trees, considering the position occupied by them in the field, apparently were a living fragment of one of several - in the original design usual - subdividing hedges.

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Due to the fact, that those trees flourished and set leaves only in early May, later than all its sisters, it didn't suffer those occasionally happening, and for most of our fruit trees disastrous stronger frosts in April. Every year, they were loaded with fruits. The biggest difference between them was the color of their fruit when ripe: Blue ones and, yellow the other ones. They were planted mixed together, forming a hedge, about 20 meter long. No year, that I could remember, that their countless, thin branches at harvest time, end of June, beginning of July, would not have been bent to the ground by the weight of their fruits, which were small, nearly spheric, with a tender and thin skin. They were outstandingly sweet and spicy, and that latter one additionally combined with a touch of refreshing acidity. (Delicious to our taste! And for this reason all beloved by us children!)



An other example, a plum too, and planted close together in a row, similar to the former ones, also concerning their age, (looking at their thick, scarred root stock, indicating, that during their long life-time they periodically had been submitted to a complete cut-back, and the bushes themselves too, submitted to the routine of annual pruning, normally being administered to that type of fruit species). That latter group of plum trees were part of a limiting hedge between orchard and barnyard of the same neighbors, an old couple. [Only mid to end of October, they were at the point to be harvested.]

The bulk of its relatively small, but extraordinary sweet fruits normally were processed [dried or put in conserves for cakes and pies. Some outstanding properties of them were, that only sub-vital fruits fell down by themselves, that is to say, would have been aborted, normally weeks before the harvest. The vigorous ones remained on the trees. For harvesting, they had to be picked or shaken down. Due to a peculiarity of the prevailing climate of our region in northeast of Switzerland, with its typically scarce rains in autumn and periods with 'Föhn' [dry falling winds from the Alps], those plums, while maturing, shrunk, de-hydrating strongly, while still remaining on the trees. Its seeds were very tiny, and their ripe grayish-blue fruits were easy to split in halves, and without the use of a big effort, its 'stone' could be removed. Its flavor, texture and

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sweetness were 'heavenly'. Every year, from late summer onward, until its harvest time, the branches of those trees were bent down, resembling weeping willows, due to the weight of its in-numerous fruits, which gave the impression, that they were more in number, than that one of its leaves.



An interesting object, worthwhile to be looked at, due to the intelligent choice, done by our formers, for species, which best would fit for the peculiarities of each site, was an area, which had - due to the abundance of food it offered, ranging from herbs, fruits, nuts to mushroom - a special attraction to me, I will describe below:

It was a place on the opposite, northern slope of the hill, where we lived, about twenty minutes of walk from our place. The area, approximately one hectare in size and completely surrounded by a rather homogenous adult oak / beech forest, was divided by hedges into stripes, more or less 25-meter-wide, and these ones east / west oriented. Grass and herbs covered its brown/gray topsoil. In the first two stripes, close to the southern border of the surrounding forest - and for this shaded by the former one, grew many typically shade loving herbs. Their lovely flowers gave to that place a special touch: It resembled more a natural reserve than a grass-meadow for making hay. The following three ones, which were out of reach of the shade, caused by the taller trees of the southern part of the bordering forest, had mainly grass and clover as herbaceous layer and a row of old fruit trees in their middle. To their composition and arrangement, it is worthwhile to pay a special attention. The last terrace, partly shaded by the bordering forest on the northern side of the area, had some similarity to the first one, in terms of low productivity of its herbal layer: Its vegetation, however, was more dominated by grass-species.

But first let us have a look at the hedges of this area, the species employed as bush- and tree-elements in them, and then the allocation of those latter ones: All indicates, that equally to what had been described in behalf of the criteria used by those of our ancestors, who had designed and

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planted those complex, functional and highly productive fruit-forests, as given some examples above, they employed the same parameters for the design of their whole agro-eco-systems. And those, 'their' hedges, were of key-importance for their functioning and for their dynamics. And that latter one in different senses:

- 1) The way, they inserted them into their design, considering position and spacing.
- 2) Their criteria in terms of allocation of each one of the employed species, and varieties of them, in their plantations and
- 3) The different positive side-effects they attained by their regular annual pruning of those hedges, which, without doubt, made integral part of their calculus used to create for each site those, we could say, 'tailor-made' arrangements, in which they planted their whole, complex systems.

In the first hedge, attached to the fringe of the bordering forest in the south of the area - and for this on the southern border of the agriculturally used area and completely shaded - was a densely planted row of yew [*Taxus baccata*]. [Medium layer tree in old oak forests].

The next neighboring hedge, distant from the first one about 25 meters, had morello cherry [*Prunus cerasus*], as dominant species, and in-between them some elder- and ash-trees. [Morello cherry: Medium-layer tree, half-shade loving, often close to water courses on places submitted to regular maintenance in terms of pruning of all companion-tree species and mowing of the herbaceous layer].

The two following hedges had mainly hazelnut and those partly shaded by some ash or linden in-between. The latter ones, ash- and linden-trees, ought to be pruned every year in July. Pruned too, the hazelnut, but those ones in January. The last hedge, close to the northern border, had its peculiarity in so far, that there were two fruit species combined together, which belong, concerning the layer, they occupy, to different strata: Gooseberry, underneath. And plum-trees, as main element, in the medium layer. Then, additionally, white poplar, in the concept of emergent species of the arrangement. And those latter ones, in order to dynamize the system, yearly topped and heavily pruned; normally in July.

The whole area was slightly sloped to the north, may be approximately 3 to 5%, and terraced. The hedges had been planted attached to the bottom of the slope of the terraces, which gave to them a particular touch of less height. Less height means less shade to the north, to 'its' terrace.

Only the last hedge, the one, on the northern border of the field, had been planted close to the edge of the slope of the terrace, proportioning in this way favorable conditions for the lower layer species, gooseberry, which close to the bottom of the slope would not have been appropriate to it.

Management [pruning] of the forest-border of that field:

Special attention, the owner of the area payed to the south-eastern, southern- and south-western side of the bordering forest of his field: Periodically, he used to prune there on the first 20 to 20 meters the higher trees. This, as he ought to say: "In order to lower the curtain"

Arrangement of the different species in the rows of fruit trees planted in the middle the terraces of that 'forest-meadow':

Considering the eco-physiological properties of the different species, which composed those rows, and the position chosen for each one, all indicates, that the design for it had been created by an excellent professional. The first one, of the first row [looking from south to north], on the south-western side, was a quince. This one followed by two huge cherry-trees. [Quince: Medium-layer tree, gives preference to part-time shaded sites. In this case, half shade from both sides: The western - although periodically pruned - border of the surrounding forest, as well as from its neighbors on its eastern side, the two huge cherry trees. [Cherry: Emergent tree; loves sun in the afternoon, fringe of forests, normally on slopes looking to the south-west. The following three trees there were pear. [Pear: emergent tree; sun the whole day.] On the eastern end of this first row, three apple trees. [Apple: canopy-tree, preference for sun in the morning.] Underneath of those fruit trees, on the whole length of the row, and in the concept of lower layer element of a stratified system, was a row of [every appr. 1,5 m a bush of white-, yellow- or red currant. Those seemed to have been very old. Their thick and knotty rootstocks at least, let come up this impression.

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The sequence in terms of species in the two following rows, on the neighboring two stripes had a similar organization to the first one, with a difference only, of less one cherry tree in the next one, and none in the last one. On their position, there stood pear-trees.



Mid-fifties, that orchard, together with thousands of others, at that time declared as 'old fashioned' ones, had been eliminated, pulled out, trees and hedges all-together, and the terraces brought to disappearance. That action made part of a big campaign lanced a few years before, for - as it had been extolled - a 'modernization of agriculture', and that then carried out with rigor and great efficiency.

Design for flat areas:

Similar in terms of concept, in flat situations: There too, the land had been subdivided into 20 to 30-meter-wide stripes. All of those latter ones, slightly arched to their middle, and each time between them a small depression. On more humid spots, with a flat drain, resp., that one enlarged and turning into a 3 to 5-meter-wide swamp.

[Account of one of our oldest neighbor, referring to those areas: "Upon all these dividing depressions, until the end of World-War I, there had been hedges, kilometers of them, composed mainly of willows and alder on the more humid parts of the area and ash, maple and hazel on the dryer parts. ... All of those, we pruned - they had to be pruned, every year. In July, most of them; and the hazel in January. ... Those patches of swamps, only after the removal of the trees, had begun to occur. And each year which passes, they seem to become more in number and bigger in size."]

Most of those divisions had a row of apple-trees in their middle. The best "Bohnäpfel", were harvested there. That variety of apple-trees only flowers and set leaves in late autumn, which permits to cultivate - and to achieve excellent results on doing it - winter-cereals in rotation with red clover and grass between-, and partly underneath them. And he pointed at a group of trees nearby; 'Look at those apple trees with their long- and stout stems! They are "Bohnäpfel" too. Those trees must be very

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old. Look at the diameter of their stems, and the numerous scars on their thicker branches. Remainder, those latter ones, of periodic heavy pruning. Their age? We don't know exactly... Two hundred, three hundred years. They had been nearly of the same size, when I was at your age. Some of our formers, a very long time ago, had planted them. And every six years, in January, before the beginning of each new six-year- rotation-cycle {turnip [1], wheat [2], spelt \ rye [3], barley \ clover & grass [4], clover & grass [5\6] } , they ought to be pruned more drastically, than in the other five years in between. This has to be done, in order to promote new growth, health and vigor in the whole system."



A close look to the different designs, created and applied by our ancestors, will reveal us, that the order in which each one of the contributing elements, such as: Chosen species, as well as the arrangement of those latter ones in their agro-eco-systems, housing for themselves and for their animals, was - there I have no doubt - based - as yet pointed at above - on clear concepts. Not only technically, but also ethically, following a general idea, which, combined both together; and intrinsically interwoven one with the other, put in practice, resulted in what we hardly could achieve, employing our modern concepts and vastly used tools:

- They produced considerable quantities of best quality and great diversity of food and other raw material at low costs.
- Attained to build up a closely knit up and firmly established community and lived in peace with the rest of their social environment.
- Simultaneously, they managed to turn their effort to attain what they needed in terms of food and raw materials of the vegetative and animal reign for the maintenance of their metabolism into a joyful, useful and beneficial vehicle. Joy- and useful for themselves, and beneficial for life on our planet and useful and beneficial too, for the whole macro-organism, our great mother, Planet Earth, itself.

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- They produced great quantities of high quality without the need for control of pests and diseases, nor for fertilizers to be brought from outside into their systems and, realizing all this, they achieved a positive balance energetically and in terms of established life.

And all this together, only by looking from a different angle at themselves and at the world in which they lived. In a more modest, more comprehensive way, than many of us are doing it, nowadays, regarding ourselves, our position in the context life.

We could say, that they achieved, by acting in the way as it had been outlined above, to approximate themselves to produce what they needed, in a mode, which could be described as 'P e a c e f a r m i n g'.

Many old accounts and proverbs, passed from generation to generation (nowadays no more in use), still reminded to that dissimilar world.



Deep gratitude to Mother Earth, who offers to all its creatures, to live joyfully, to realize their tasks-, and to fulfill their functions moved by inner pleasure!

Then, deep gratitude to those ancestors, who had built up those above described agro-eco-systems, given examples, how to act in harmony with Mother Earth, that is, to behave in a way, so that their - we could do it too! - participation turned - in our case would turn - to be serviceable to all submitted to-, and influenced by their interaction, and then had passed their acquired knowledge to future generations.!

And immense and warm thanks, too, to my Mother and my Father, who had grown up in a period of great troubles and material scarcity between the two world wars.

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They were not blessed by material heritages. {They bought that small estate, where I grew up 1942, during World-War II, with money, they had managed to save under great difficulties as young professionals in the late thirties, beginning forties. With that, together with some credits [to be paid back later on], they managed, to attain it.}. The most important resource, however, they had acquired - and always zealously made use of, consciously and far-sightedly - was their practical knowledge, and their disposition, to realize, what they considered to be necessary, correct, appropriate and worthy, in defiance of all obstacles and difficulties, which existed.

... Proudly, they brought up their eight children. Money was scarce; not, however, food: Food of best quality and of an immense diversity. Decently achieved, and mostly produced by themselves.



PERENNIALS IN THE DAY-TO-DAY DIET OF A SMALL FARMER'S FAMILY IN THE NORTH-EAST OF SWITZERLAND AT THE END OF THE FORTIES AND THE BEGINNING OF THE FIFTIES OF THE LAST CENTURY

For this purpose, let us have a look at what we ate, at the presence and importance of perennials in our nutrition, in the routine of a small farmer's family in the north-east of Switzerland in the mid of the last century:

HERBS:

Herbs for salads, spinach, medicinal use etc., etc.

My mother had a big collection of those herbs in her carefully fenced garden in the front of our house. Other ones she had planted in some protected special places, as for example, on sunny slopes, not easily accessible borders of plantations etc. Many wild herbs, too, were highly appreciated, looked after, cared for, and eagerly collected: Mainly in early spring time, they nearly daily, made part of our dishes:

- Young leaves and buds of dandelion (*Taxacum*), from February onward. For salads, the tender leaves, and the buds for spicy pickles.
- Nettles: Buckets of fresh sprouts, we harvested, in order to transform them into spinach, or to be integrated in omelettes.
- Wild chives, [considered as “winter-weed”], which grew, forming close stands, on sunny spots in one of our orchards, daily entered into our soups as a fresh green [March, April].

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- Bear-garlic: One of the highlights, in terms of salads in spring time, were the tender young leaves of bear-garlic (We ate a lot of delicious greens; but the spicy, juicy and tender leaves of that early-spring-undergrowth of old beech-forests, we would not have wanted to miss them!)



Then, in summer time, despite of the diverse and generous offer, and daily consume of green salads, out of finest lettuce, summer-cabbage, leaves of rocket etc., we loved to pick and eat on our way to school the young leaves and stems of Rumex, which thrive on sunny borders of open fields. Also appreciated were flowers and leaves of Oxalis. The latter one, abundant, and part of the under-growth of old pine-stands (*Abies abies*).

FRUITS

Fresh fruits in general, but more even, the composition of these, in terms of species, degree of their presence, and the importance, given to them popularly in the daily food could be used* as a sensible tool, which could allow us to assess the state of intensiveness and quality, existing in a community or society, in terms of their proximity to the natural and original eco-system of the place they live.

**[With very few exceptions, corresponding to communities, living in regions with extreme cold types of climate.]*

BERRIES:

Berries, berries ... No day of the year, that we would not have eaten, respectively enjoyed, at least once a day, berries as an important ingredient of our food: Fresh, between June and October. Dried, other ones, in conserves (jams etc.). Or frozen, (to be used out season), as main component of creams, tarts and cakes.

Perennials

One of the foci in the cultivation of plants for food of my mother, were berries. She loved them, and she passed her passion for this great gift of heaven to her family. In her collection, she had - additionally to those, at that time commonly planted varieties - many old genotypes, mainly of the genus *Ribes*.

Fresh berries, we harvested from late May onward. The first ones, being strawberries. Afterwards, during nearly the whole berry-season, which normally lasted until October, we collected every day, eating fresh as much as we could. The plentiful left overs then, were processed, and stored for later use.

Additionally to the cultivated ones, wild, spontaneously growing, or, the same ones, planted in hedges, were highly appreciated too, and belonged to the group of - let us tell - 'integral components' of our alimentation: We loved the big, beautiful strawberries of our garden; nevertheless, the wild ones, for this, we wouldn't have wanted to miss: In their season, often, hours, we spent, to pick their pleasant and savory, tiny, sweet, fruits. In our spare time, or on our long way to school.

When there were lots of them, we transformed our Sunday-expeditions, into actions to gather bigger quantities of those berries. Rarely, that we wouldn't have returned with full cradles! Happily and proudly, afterwards, we transformed them into jams, or decided to add them to cremes and tarts: Delicatessens, of the finest ones, made out of 'our' (!) berries.

Similar, to what I told of our attraction for wild strawberries, was our relation to [wild] raspberries and blackberries: - Despite of the fact, that our mother had in her garden a considerable area of cultivated ones, and normally had managed to achieve, year after year, excellent harvests out of them; we never would have spurned or forgotten to participate in the harvest of the wild ones!

It seemed to us children, that many of the adults, in fact, didn't like them very much [listening to their commentaries, concerning] those wild brambles, which vigorously ranking in growth, occupied nearly all spots, where the forest was in its early phase of regeneration, causing a lot of hard work to them, to 'control' them, in order avoid that they would overgrow the young trees.

Every summer, they generously offered their huge amounts of most agreeable fruits, loved by us children, and appreciated as well, by many species of mammals and birds.

Another, common source of berries for our consume, though not cultivated, but looked after, cared for, and popularly appreciated, were species like blueberries, cranberries or the juicy, red berries of yew (*Taxus baccata*) etc. [That latter one, a medium layer- tree, common constituent of old oak forests, or, many of our formers had integrated them in their hedges on less sunny spots. - In the meantime, this species has become rare, and in many regions it is in extinction.].

Every year, the harvest of this group of fruits, extended into something like a 'social event': When someone had figured out abundantly bearing places or trees, communicated it to his friends and neighbors. The harvest of them, then would be realized together.

... Berries, berries and once again, berries.

STONEFRUITS:

Cherries, plums etc., cultivated ones, and a lot of wild ones too. The latter ones were integral elements of hedges on dry and sunny spots, or being planted, respectively spontaneously growing in fringes of forests on south- and south-west exposed hill-slopes.

The beginning of the ripening season of the different species and varieties of them, for each species happily would be noticed, when we could pick the first matures of them. But that of the cherries, one of our most loved fruits, every year was a specially celebrated event.

In one of our neighboring regions, there were many beautiful cherry-grooves with a lot of old, huge cherry-trees. Every early summer, most of them were loaded with fruits.

Most of the red and yellow varieties matured first, followed by numerous black ones. The last of those latter ones, was a small-sized one and extremely sweet.

During the cherry season, every day at least once or twice, we visited at least one of those beloved trees, picked and ate of their delicious fruits as much as our stomach held. [Normally with allowance of the owners of those trees, but often pinched, too!]

Every year, our mother filled at least a hundred of 2 - 1 glasses, [conserves for the next 11 months. Another fraction, she processed into jams, and a third, big quantity, she put into the freezer, to be stored there for later use, [most of it for flans and tarts].

Perennials

Soon after the end of the cherry season, some sisters of the same genus began to drop in: The first of those were two old varieties, a blue and a yellow one, tiny sized, not bigger than small cultivated cherries, and with spheric-shaped fruits. The trees were part of a collection of mostly - yet at that time! - no more cultivated species, on the property of an old couple, [mentioned above]. ones of our close neighbors. Their fruits had small kernels and a thin, tender skin.

When the time came, that those popularly called "Pflümli", were mature, and the trees loaded with their yellow, respectively blue fruits, the old woman, or her husband, called us, with inviting expressions and a warm smile on their face: 'Come children, pick and eat, as much as you can!' - [Is there any money, or chic modern supermarket, which could plant into the hearts of our youngsters a comparable deep joy and happiness, to that, they get by being invited to participate unconditioned in that paradisaal privilege?]

The next group of stone fruits, to mature, were *rené claudes*, and later on, in September \ October, plums. Plums, eaten fresh, plums for jams, filled in glasses, to be pasteurized, (conserves), or frozen, to be used later on for tarts and desserts etc.

Quite common in our diet were dried plums. In fact, they were very appreciated as sweetener, or to be eaten between the meals. Special varieties for each particular purpose: For snacks, for example, we used mainly two types, which normally were dried entirely. They were spheric, small, outstandingly sweet, and nearly diluted, chewed for a small while, in our mouth, leaving over only their small kernel. On the opposite side of the range of the genotypes used, [in terms of size and texture], was a big one, its pulp was firm and easy to get removed its kernel. Rehydrated, this variety [Fellenberg], was the most commonly used to sweeten cookies, tarts, creams, soufflés, etc.

Last, but not least, in December \ January, after the first strong frost-in, the, small, dark-blue and delicious fruits of *Prunus Espinosa* were ready to eat. The frost, in the mean time, had softened them and taken away their astringency, as well as transformed their starch into sugar. What we not could eat fresh, I normally gathered and brought them home. Upon our big tiled stove in our living room I, dried them, in order to get my most appreciated stuff to sweet my teeth. Tastier, sweeter than any other dried fruit!

APPLES:

Perennials

Dozens of varieties, we had. Each genotype for its specific use, and, additionally, each of it selected to be ready for consumption in its particular season: Immediately after their harvest. some ones, the first of these in July, the last one of this group, in November, or even later on, after the first strong frosts. Other varieties, had to be submitted to a process of post maturation, before being pleasant to eat: After some weeks or months, specific for each one of those. And that being done in the old, traditional cellar with its 1-meter thick stone-walls, earthen floor, and a ceiling made out of 15 to 20 cm thick oak-wood boards. The last one of that type of varieties of apples, we ate in the beginning of September, that is to say, 11 months after its harvest, and two months after the drop-in of the of the first five varieties of the new season.

The fruits of some varieties were used to be dried and afterwards integrated in cakes or becoming part of snacks.

Apple had a function of - let's say - a main pillar in our alimentation: It was something like an integral component of nearly all our meals, from early morning until night time, before going to bed. Apples, all year around, for each specific purpose or use, its particular variety. Apples as snacks, usually refreshing, juicy ones. Crisp ones, to open appetite for main meals, then, in the concept of dessert a delicate and sweet variety. Apple purée, apple cakes. ... Apples for hundred and more uses.

Then apple juice. Every day. It was one of our principals "thirst quencher".

And, of course, we cannot forget our highly famous cider, handled by the heads of the households in our rural community as 'their treasure'. Each one of them convinced of the excellency of his way of handling, cultivating his trees, first, and second, that his particular blend of juice from different varieties of apples was the best, and third, that his fermentation would result in the most delicious wine. Special attention, they spent upon separating inferior qualities of fruits. The barrel used, only could be made out of oakwood and it ought to be thoroughly and carefully cleaned, every year, before its new use.

Neighbors, visitors and guests, they warmly and generously invited to enjoy together with them "their wine", or drunk them together in there weekly meetings. - Cider, wine only for poor bumpkins?

PEARS:

These, as well as apples, played an extremely important role in our nutrition, and were omnipresent in our day-to-day food: Fresh, out of hand. The first of this group, named 'hay-pear. Mid July, it matured: Tiny in size, but absolutely sweet and juicy. All beloved by us children! When they were ripe, every day, we visited 'our' pear tree, filled our stomach first, and afterwards our pockets. It was one of those old huge pear-trees with a stem of more than a meter of diameter. According to our elders, 'planted by our formers before the French Revolution'.

The last variety - to be consumed only in April / May - was a genotype, which, harvested in October, needed 5 to 6 months of storage in the cellar for post-maturation, before being ready to be eaten. It was extremely juicy, sweet, and left - eating it - an amazing feeling of refreshing.

Pears, eaten fresh, were popular and highly esteemed; the main importance, however, attributed to them, was their use - processed - as sweetener:

a). The juice of some special varieties submitted to a process of dehydration (see beyond), and

b), dehydrated too, but only cut in halves or the entire fruit. - But let us look now first at the more sophisticatedly processed one, at subject (a):

One of the varieties to be used for that latter purpose, was called 'Sülibirne'. We had only one single individual of it, but - in compensation - it was the hugest pear tree, I - up to now - have seen, and at the same time also the one, which most produced and, it had been told, that it never had failed to do that. It flowered and set its new leaves only end of May. ... This was after the flowering period of dandelion and the winter-cereals. And then, also as the last one of its genus, its fruits matured. Normally between beginning and mid November, that is to say, after the first stronger frosts. They were small, sugar sweet, and not more than 4 to 5 cm in diameter. For harvest they had to be shaken down, gathered and then put in big bags, holding each of them one hundred liters. Every autumn, we got from that tree a quantity of its tiny fruits, which filled 25 to 30 units of those bags.

Without delay they were brought home, thoroughly washed with fresh water, chopped and pressed out. The resulting juice then was transferred to a two meter wide, flat and open copper-pan and slowly

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cooked, in order to be dehydrated, until it acquired the texture and color of honey: Our 'birnel'. - The most important sweetener used by our former ones.

The second pillar, concerning sweeteners, were dried pears. Once again, special varieties were chosen for this purpose, and the drying process realized at temperatures no higher than 50 degree Celsius at the very beginning, and then lowering after the first shock of heat, and remaining afterwards near by 40 degree C. Dried pears were eaten as snacks, mainly in winter time. Rehydrated, they were used in the concept of sweetener in cookies, tarts, bread, etc.

[The nowadays vastly consumed - and perhaps not extremely healthy - sugar was not in demand, nor very much appreciated.]

NUTS:

Hazelnuts:

Cultivated-, as well as wild ones, those latter ones thriving on eastern- and south-eastern borders of forests. According to our oldest neighbor, hazelnuts had been one of the vastly employed constituent of hedges on south-eastern, eastern- or slightly northern sloped parts of the cultivated areas in our region. Partly 'welsh' (grafted) varieties; the bulk, however, local genotypes, that is to say, trees selected for their health, - vigorous growth, -big and tasty nuts, as well as for their high productivity.

Walnuts:

Within the collection of all the trees in the surroundings of our house, the walnut-trees had a special position. To them was attributed something like an independent personality. We had many of them and they were well cared for, and for this reason, by its side, reinforced their natural tendency, to have a geometrically equilibrated, beautiful, round crown, and also for their fine timber. And thirdly, last, but not least. for their much appreciated nuts, of which they gave a lot, every second year.

Both, walnuts and hazelnuts, after harvest in September, October, had been dehydrated up to the point, that they could be stored, even for a longer period, without danger of fungal or bacterial attack. For this purpose, they were led out upon a wooden trellis, exposed to the mild sun of the autumn and protected from the dew at night and from occasional rain-showers. Once sufficiently dried, they were put in wooden barrels and then stored in the attic for later consumption.

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Our mother had a considerable collection of those barrels. Nearly every year, we managed to refill all of them. Then they were sealed and stored for our consumption during the next twelve months.

Walnuts, we had only the cultivated ones; whereas hazelnut were common in many places, specially on sun exposed borders of forests, and there with preference, when exposed to the morning sun.

The same, as had been decried in behalf of popularity and use of wild strawberries etc., can be told concerning wild growing hazelnuts: They were very much appreciated and their harvest every year, end of September turned into a popular event.

One of the sayings of my father was: "Your pockets filled in the morning with hazelnuts, dried apples and pears, you will pass the day without hunger, and will have sufficient surplus, to give a good share of that to your friends, and still have left overs for some squirrels and birds!"



THE DETHRONED QUEENS

BEECHNUTS AND ACORNS:

Since I remember, yet in my earliest childhood, I had - and maintained it! - a habit, to test all, which I believe, that it could be edible. Observe before, who eats it, give a small piece in my mouth, chew it a little bit. Then spit it out, immediately. If there are no negative sensations, I repeat the operation, one day, two days later etc., and increase, in each attempt, time and intensity of chewing. By the employment of the above described procedure, I attained to systemize dozens of wild species, concerning their aspects in terms of being edible or not, having tasty- or less tasty leaves, -seeds or -fruits, etc., and the same done with thousands of plants, each one with its particular properties. Beginning from algae up to trees. Nothing escaped.

- This, our planet could be beautiful, if we wanted! All one, big paradise! Thousands of edibles species. A good part of those, however, completely ignored by us, concerning their potentials as source of food for us. An other fraction, though recognized to be edible and tasty, but not used. And then, still a huge number of species, which once had been integral- and highly appreciated part of the aliments consumed by some of our formers, cared for by those; but then abandoned, and sent to oblivion. Many of those species, not a few of them, and heavenly savory, easily could be acquirable and - adopted as constituent parts of our aliments or re-adopted - to enrich our menus!

Out of that fraction, two tree-species had to me - since I remember in my early childhood - and continue having! -, a nearly irresistible attraction: Oak and Beech.

BEECH NUTS [*Fagus sylvatica*]:

Nuts, seeds, from many genotypes of them, are not only edible, but extremely delicious. Yet in their flowering season, curiously I went to see 'my' trees, visited them frequently during the summer, and then, in September\October, when their ripe seeds were falling down, when ever I could, I 'went for harvest'. Gathering them. For my palate, beech-nuts belong to the best nuts, we have, and which - potentially - with great

facility could be cultivated in our cool- temperate climate of the northern hemisphere.

There exists a very wide spectrum of different, genotypes in terms of taste, size, nutritional properties, adaptability to different climatic- and soil-condition, etc., as well as in terms of their vigor and productivity. Material of selected, more desirable genotypes, we could graft upon strong and beautiful adolescent trees in new stands of our forests. [Put the grafts on the bottom of the bigger branches of their crown. Doing it in this way, we will not lose their valuable, straight and long stem.]

Before you decide, however, to graft those ones in the forest, - without resistance and delay - graft as many as you achieve to get a common agreement that it may be done, in stands and single trees, which make part of urban arborisation. [Urban forestry!]

Parallel to the above described effort, this is, increasing the number of ours considered ‘best ones’, we could employ techniques such as cross-breeding, hybrids etc., etc. An item, perhaps, to direct some of our efforts, concerning plant-improvement] upon.

OAK; ACORN [*Quercus*]:

This [second] species, oak, had been - there is no doubt - a widely cultivated species, or at least had been gathered systematically and used by many ancient populations in all part of its natural habitat of the northern hemisphere. So too, in the region, where I grew up.

In the beginning of the fifties of the last century, this fact still was present in the memory of our rural community. Present as parts of the content of some old accounts, partly passed verbally, or written in tales. A swearword for a poor devil in our rural region was ‘Eichelfresser’. [One, who has to eat - for lack of other food - acorn].

That was strange to me, because in the course of the years, I had identified so many marvelous genotypes with extremely tasty seeds. For example: sweet ones, without any astringency, some mealy ones, others more crisp. Some of those, when roasted were comparable with toasted chestnuts. Other ones were bitter- and/or astringent. But those, when kept them immerse for some weeks and changing water of their ‘bath’ every one or two days, they lose their bitterness and astringency. Then they can be eaten grind or macerated as ingredients for soups, omelettes, or ad [up to 50%] to the dough for bread.

With immense sympathy, I am watching the efforts made-, and initiatives taken privately by some persons or popular movements in Spain

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and Portugal, to revive their, in the meantime abandoned, old tradition of regular consumption in different dishes, their ‘bolotas’ [acorns].



EPILOGUE

This urgent request in terms of revising some of our actual concepts, is not an appeal to return, to go back: On the contrary: it is a plead to open our mind, learn from our formers, adopt from them-, and then employ, intelligent strategies, developed by them, and try to avoid errors, they had committed.

It is a plead to go forwards, ahead. Ahead in the direction of a reconciliation of modern man with his single and unique home, Planet Earth, in order to escape the destine of extinction and oblivion of many of our former civilizations.

A typical feature of our actual civilization is technology. We could try to use it in a beneficial way for life, instead, of what we are doing, destroying it. This, translated to our item in quest, could mean, that instead of heavy machines, which together with their load, often bring more than 50'000 kg with their 10 wheels upon the soil, compacting, torturing it, we could work with smaller, and more efficient implements, made out of mainly carbon fiber and other light materials, and, simultaneously, designed to be serviceable for life. Small robots, weighing four to six kg each one, in most of the basic operations could do a more intelligent job: Plowing, subsoiling, in order to loosen soil, we are obliged to do, because brutally we had compacted it before, by the use of our actually usual machinery and because of, by us developed and applied, deadly strategies of treating life upon- and in the soil.

We could develop strategies, and construct machines, research for technologies, which, employed, would favor life and life-processes in all its aspects.

PEACE-FARMING, INSTEAD OF WAR-FARMING

Ernst Götsch