

Potential Undiscovered Function of Viereckschanzen

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ABSTRACT: Water crises are highlighted as one of the most pressing global challenges. The main aim of this article is to show importance of water resources from the view of ancient knowledge. Applied research is needed on this topic, climate change adaptation technology like water condensation in the soil and underground channels, qanat systems, atmospheric vortex engines. There is no clear conclusion to this topics until today. Hillforts and especially viereckschanzen can be potential solution in this way, especially while integrated with atmospheric vortex engines. Such systems can potentially influence cloud precipitation. Author see potential academical corruption in a way that such options were not seriously surveyed until now while drinking and irrigation water resources are needed worldwide. Ancient knowledge has been forgotten and not integrated with modern Technologies.

KEYWORDS: Atmospheric Water Generators, Atmospheric Vortex Engine, Corruption, Hillforts, Viereckschanze

I. INTRODUCTION

Strategies commonly used in qualitative research are case studies, ethnography, grounded theory and action research (Collis and Hussey, 2003). In this paper is used in particular grounded theory, which is based on historical facts and results of contemporary science and technology. While using a methodology based on grounded theory, the researcher does not set hypotheses in advance, as the assumed hypotheses lead to a non-data-based theory. If the researcher's goal is to give a precise description, then another method should be chosen, since the grounded theory is not a descriptive method (Glaser and Strauss, 1967). The analyse of available documents which explain that cosmic radiation contributes to the multiplication of terpenes particles in cloud formation was done before grounded theory which is explained in this paper was discovered. The analyse of available documents on hillforts, viereckschanzen and charcoal production was done as well.

II. MOSES TABERNACLE AND VIERECKSCHANZEN

Moses was leading Hebrews to the Promised Land through wilderness for long forty years. Moses needed to ensure water for Hebrews. It is a question how he managed to do so. Moses is inspirative until today.

After the biblical exodus from Egypt, Moses made water for the people of Israel in the desert by striking a stone. Now Water-Gen is striking water from air. Water-Gen, an Israeli company whose technology captures humidity in order to make drinking water out of air, is not likely to experience the cash-flow squeeze that afflicts many fast-growing companies. That's because Russian-Israeli entrepreneur and billionaire Michael Mirilashvili, who is also the vice president of the World Jewish Congress, bought control of the company last summer, and because it has high-profile advocates. Israeli Prime Minister Benjamin Netanyahu mentioned it in an interview with CBS's "60 Minutes" about Israel's high-tech prowess. At the AIPAC conference last month, Harvard Law professor and Israel advocate Alan Dershowitz took the stage to showcase its technology. In September, the company presented its solution at the United Nations (Shoshanna, 2017).

Nobody knows what was real function of Moses Tabernacle which housed the Ark of the Covenant. Logic idea would be that Tabernacle was also able to capture humidity in order to make water out of air.

Sources claim that Tabernacle was related to clouds production (Exodus 40:38).

Interesting is that there were oil lamps and incense in the Tabernacle. Such particles can be potentially efficient condensation cores.

Pure biogenic particles are underestimated for clouds formation. Our planet's pre-industrial climate may have been cloudier than presently thought, shows CERN's CLOUD experiment.

CLOUD shows that organic vapours emitted by trees produce lots of aerosol particles in the atmosphere when there's no sulphuric acid – a main product of burning fossil fuels. Previously, it was thought that sulphuric acid was essential to initiate the formation of these aerosol particles but the new research shows that these so-called biogenic vapours are also key to their growth, and can help them grow up to sizes where they can seed clouds. **CLOUD has also found that ions from galactic cosmic rays strongly enhance the production rate of pure biogenic particles – by a factor 10-100 compared with particles without ions.** This suggests that cosmic rays may have played a more important role in aerosol and cloud formation in pre-industrial times than in today's polluted atmosphere. The Intergovernmental Panel on Climate Change (IPCC) considers that the increase in aerosols and clouds since pre-industrial times represents one of the largest sources of uncertainty in climate change. The CLOUD experiment is designed to better understand such processes (Gillies, 2016).
Moses Tabernacle was surrounded by rectangular fence what is very similar to **Viereckschanze Construction.**

Like in all Viereckschanzen there was a big gate in Moses Tabernacle rectangular fence. This gates could be done potentially to somehow use wind (potentially for so called atmospheric vortex engine – see below).

It is proven that ancient civilisations used wind for water management as was shown in Nazca.

„- Ancient Peruvian Nazca culture built large spiraling funnels into the desert

- Known as puquios, they have baffled archaeologists as to their use

- Research suggests they helped to draw water along underwater canals

- Data from satellite reveals they are still helping to irrigate some areas“
(Gray, 2016)

III. VIERECKSCHANZE AND WATER MANAGEMENT

Available sources indicate that Viereckschanze is a German term used in archeological terminology in Czech as well as in other languages as a designation for quadrilateral areas bounded by valleys. These are characterized by a square to rectangular shape of 50 to 200 meters, an area of about one hectare, a sheltered valley without an internal structure (the authors of this article deal with the fact that it is not true) and an external moat with sloping walls. Entrance to the complex appears to be a break of the wall, but not a ditch (Venclová 2008).

There are other opinions on this topic and amount of viereckschanzen. „It seems absurd that Viereckschanzen served the sacrificial function. Bavarian archeology with the help of aerial photographs found that only 40,000 of these facilities exist in Bavaria. Often the chances are so close to each other that they use the same wave. What would be good for large-scale sacrificial devices to be set up in such a tight space? With extensive research, we have found that a large part of the European continent - if not all - is completely covered by these "Celtic chances". I think the Celts used some of these devices for their own purposes but found them already done at the time they settled. It seems that they were still aware of how these facilities were set up to fulfill their function, as we seem to have been corrected or re-established in Celtic times. What ancient civilizations have established these first chances, we can only speculate (Valentová, 2004).

However, the results of the exploration of the carbon smelt were breathtaking! Perhaps the greatest surprise of the whole research was that when the original age of charcoal, designated in the Czech laboratory for the period around 800 BC, was now refined at an unbelievable 1350 BC (± 35 years). Evidently the Celtic oppida Stradonice or Závist, to which the fortress of the Vladař was often compared, is a much younger date. It seems, therefore, that the monumental Vladař was built perhaps hundreds of years before the arrival of the Celts. At the same time, however, this does not mean that the Celts had not used it as a temporary shelter in their time (Zahradníček, 2006).

The work of the Karlovy Vary Museum co-operating with the civic association VLADAŘ contributed to the expansion of the mosaic of knowledge about the development of the fortified settlement. In 2007, they explored the shore of a small pond on the western foothills of the Vladař. In 1980, Mr. Reseteri of Kojšovice dug a small pond with a bulldozer and hit "a lot of human bones in some wooden corridors". He saw a strange wooden structure hiding in the mud when he lowered the water level under the dredger. Due to the not entirely legal context, this finding came out only in 2007 on the basis of testimony by the witness. In the probe on the shore of the pond, the lower part of the wooden structure was made of carefully and accurately worked oak prisms of a rectangular cross section in the clay sediments. Its timbered structure formed several interconnected chambers. The bottom was paved with river valleys. Parts of the same wooden structures (and the same orientation) were found on the opposite side of the pond. Radiocarbon dating included the oak design until 8th-4th. century BC. Dendrochronological dating revealed two groups of wooden structures. For the part were used young and fast-growing trees that were cut shortly after 480 BC, the chambers themselves were made of old and slowly growing oaks that were cut shortly after 463 BC The original size of the water reservoir was 10 × 11 m. , up to four rows of oak beams had retained walls up to 120-140 cm high. The purpose of a large and extremely

precision-built tank with wooden chambers at the edges is unclear. Because it was originally a spring site in these places, **it could be some sophisticated water capture system.**

Relatively complex wooden constructions in the form of rectangular chambers (in some cases sealed on the inside by non-combustible clay) could create a retention reservoir at the site of the springs. However, in a large area of the entire structure of timbered chambers, **it is not possible to exclude hypothesis even in some places from the interconnection with above-ground wooden structures. Water resources have always been of great strategic significance in congested urban agglomerations, which is also confirmed by the fact that the whole spring is located in a heavily fortified area of the forecourt.**

A unique wooden structure is likely to be considered one of the oldest documents of artificially built water reservoirs with dump in the wider European area (Wikipedia, 2018).

Most probably viereckschanzen were sophisticated water capture systems.

Celtic chances are built from individual layers. The ground on the chances had to be fully selected a few meters deep and then filled again - after the technical conditions for the chances of working through the correction shafts were created, the water loop (ie a water flow that flows at a certain height then suddenly falls like a waterfall, and flowing to another height level) and four manipulations. When reloading the soil, the original excavated soil is used to cover the additional layers. First, various earth layers, including clay (clay), AlSiO_4 , charcoal, mica, and others, were inserted into the excavated excavation. These additional additives are often optically visible today, since indoor chances are usually about half a meter to one meter taller than the surrounding landscape. This fact is well known to archaeologists, but they have not yet come to the conclusion that these layers have to be imported retrospectively, as they have usually explored only the upper layer of the earth. Knowledge of the construction of individual layers of chances can be considered as conclusive, as we could document them on different chances we have explored. **The Keltish chances are likely to produce physical effects - according to EFODON E.V. - based on the layered structure of its foundations. There seems to be a sort of condensation effect here. This also corresponds to the occasional measured temperature difference between the inner surface of some (active) chances and the surrounding outdoor landscape, as well as the (measured) temperature difference in the four-stroke manipulation (Vierermanipulation) (Valentová, 2004). "**

Underground water channels in viereckschanzen are in some way similar to Iranian qanat systems. Most probably manipulated by big shafts inside or outside viereckschanzen. Or perhaps wooden dams were implemented.

Perhaps the reason could be for examples in a way like in one Algerian qanat (so called foggara) case.

Qanats (designated foggaras in Algeria) are the source of water for irrigation in large oases like that at Gourara. The foggaras are also found at Touat (an area of Adrar 200 km from Gourara). The length of the foggaras in this region is estimated to be thousands of kilometers.

Although sources suggest that the foggaras may have been in use as early as 200 AD, they were clearly in use by the 11th century after the Arabs took possession of the oases in the 10th century and the residents embraced Islam.

The water is metered to the various users through the use of distribution weirs that meter flow to the various canals, each for a separate user.

The humidity of the oases is also used to supplement the water supply to the foggara. The temperature gradient in the vertical shafts causes air to rise by natural convection, causing a draft to enter the foggara. The moist air of the agricultural area is drawn into the foggara in the opposite direction to the water run-off. In the foggara it condenses on the tunnel walls and the air passes out of the vertical shafts. This condensed moisture is available for reuse (Wikipedia, 2018).

Environmental contexts range from humid ecosystems, which may hold varying amounts of water, to conditions of extreme aridity. It should be noted that the terms "humid" and "arid" refer to the surface condition and indicate the presence or absence of open water. The condition of the soil and subsoil may be different. In deserts, in fact, water, which is minimal in the atmosphere and nonexistent on the surface, is present in the soil. And it is not always the water of deep aquifers. Under all conditions, the atmospheric water cycle takes place not only in the open air, but underground as well. The atmosphere in fact does not end where the air meets the soil, it continues in the deep layers. Continuous exchanges take place between the air above and below ground, and one consequence of this circulation is the condensation of water in the soil when the ground temperature is low enough. It is precisely in these exchanges and interactions that catchment tunnels intervene. The tunnel absorbs and condenses the moisture coming from above, and sucks and condenses the one from the bottom, helping to lift the water table. The cavity of the tunnel and of the vertical shafts act as filtering gallery and condensation chamber. The vertical shafts regulate air changes and maintain atmospheric pressure in the tunnel suitable to the water absorption and flow. When the air is saturated, or nearly saturated, with moisture, small differences between interior and exterior temperatures are enough to cause condensation. The hotter the air is,

the more moisture it can hold. In arid areas the differences in temperature between the surface and the subsoil, and the wide variation in temperature between day and night, become decisive. Condensation is also facilitated by the capacity of water vapor to move, regardless of air movements, from points of greater tension to points of lesser tension. Every shadow, every difference in temperature, humidity or existing water share, further assists condensation. In the tunnels the filtering surfaces, the stones and other asperities, the air shafts, all work together to manage the underground hydro-atmospheric cycle (Laureano, 2012).

EFODON company is very confident that viereckschanzen worked as **weather influencers**. According to EFODON the establishment of a large number of these chances has allowed a broad spatial harmonization of weather that can be documented. Compare the climatic conditions at the same latitude in America: there are regular windstorms (tornadoes, hurricanes) and blizzards - not with us! If a whirlwind came to us across the ocean to Europe, it would dissolve off the coast. Has anybody ever been thinking about why this is so? The worsening of the weather in recent years is very likely to indicate that the state of Celtic chances has been drastically reduced (construction of motorways, houses) and that many existing chances have lost their function in part or in part because groundwater bodies have been damaged or destroyed (also thanks to the construction of roads and motorways and houses, drainage projects, etc.), as chances function similar to car batteries: if they are not liquid, they stop working (Valentová, 2004).

Authors of this article asked by email EFODON about this claims. EFODON finished this research in 1998, long time ago. However, they persist on weather influencer theory.

„The field created in the air above the chance of its radiation upward appears to be high enough to the atmosphere to influence the weather. This effect can be observed by everyone. With many Celtic chances (active, not broken or destroyed), we can see with the naked eye that, in a light cloud just above the chance of a cloud blanket, it is torn apart, somewhat sharply bounded. Often, we are talking about the "weather interface", **and we can not explain scientifically what exactly the weather should be influenced in these places** (Valentová, 2004).“

In authors opinion – potential explanation can be radon question which explanation is above scope of this paper. **Potential function of Viereckschanzen can be also in atmospheric water generators. Author is undergoing research in this way. Water condensation in underground water channels is very possible. It would be so-called air well, high-mass atmospheric water generator.**

To such problematics could be said by critics:

„We would like to stress the following point. To obtain condensation, the condenser temperature of the stones must be lower than the dew point temperature. When there is no fog, the dew point temperature is always lower than the air temperature. Meteorological data shows that the dew point temperature (an indicator of the water content of the air) does not change appreciably when the weather is stable. *Thus wind, which ultimately imposes air temperature to the condenser, cannot cool the condenser to ensure its functioning.* Another cooling phenomenon — radiative cooling — must operate. It is therefore at night-time, when the condenser cools by radiation, that liquid water can be extracted from air. It is very rare that the dew point temperature would increase significantly so as to exceed the stone temperature inside the stone heap. Occasionally, when this does happen, dew can be abundant during a short period of time. This is why subsequent attempts by L. Chaptal and A. Knapen to build massive dew condensers only rarely resulted in significant yields (Beysens, Milimouk, Nikolayev, Berkowicz, Muselli, Heusinkveld, Jacobs, 2006).“

However above mentioned conclusions from Nasca underground channels and Laureanos' findings are showing that such water „generation“ from the soil is possible.

IV. ATMOSPHERIC VORTEX ENGINE

Author of this article knows that attempts to get moisture from air by atmospheric water generators are poor in comparison with attempts to get moisture of the atmosphere in a way of heavy rains and in relations to hurricanes and such phenomena.

Let us get back to the Moses Tabernacle. Bible is saying following things:

EXODUS: 13:21–22

²¹ And the Lord went before them by day in a pillar of cloud to lead them along the way, and by night in a pillar of fire to give them light, that they might travel by day and by night. ²² **The pillar of cloud by day and the pillar of fire by night did not depart from before the people.**

Moses probably knew how to control such clouds and fire and in the place where it was needed while it did not depart from before the people.

Let us talk about so called **dust devils**. They are comparable to tornadoes in that both are a weather phenomenon involving a vertically oriented rotating column of wind. Most tornadoes are associated with a larger parent circulation, the mesocyclone on the back of a supercell thunderstorm. Dust devils form as a

swirling updraft under sunny conditions during fair weather, rarely coming close to the intensity of a tornado. A **dust devil** is a strong, well-formed, and relatively long-lived whirlwind, ranging from small (half a meter wide and a few meters tall) to large (more than 10 meters wide and more than 1000 meters tall). The primary vertical motion is upward. Dust devils are usually harmless, but can on rare occasions grow large enough to pose a threat to both people and property (Glossary of Meteorology, 2000).

Dust devils form when hot air near the surface rises quickly through a small pocket of cooler, low-pressure air above it. If conditions are just right, the air may begin to rotate. As the air rapidly rises, the column of hot air is stretched vertically, thereby moving mass closer to the axis of rotation, which causes intensification of the spinning effect by conservation of angular momentum. The secondary flow in the dust devil causes other hot air to speed horizontally inward to the bottom of the newly forming vortex. As more hot air rushes in toward the developing vortex to replace the air that is rising, the spinning effect becomes further intensified and self-sustaining. **A dust devil, fully formed, is a funnel-like chimney through which hot air moves, both upwards and in a circle. As the hot air rises, it cools, loses its buoyancy and eventually ceases to rise. As it rises, it displaces air which descends outside the core of the vortex. This cool air returning acts as a balance against the spinning hot-air outer wall and keeps the system stable** (Ludlum, 1997).

Certain conditions increase the likelihood of dust devil formation.

- **Flat barren terrain, desert or tarmac:** Flat conditions increase the likelihood of the hot-air "fuel" being a near constant. **Dusty or sandy conditions will cause particles to become caught up in the vortex,** making the dust devil easily visible.
- **Clear skies or lightly cloudy conditions:** The surface needs to absorb significant amounts of solar energy to heat the air near the surface and create ideal dust devil conditions.
- **Light or no wind and cool atmospheric temperature:** The underlying factor for sustainability of a dust devil is the extreme difference in temperature between the near-surface air and the atmosphere.

Windy conditions will destabilize the spinning effect (like a Tornado) of a dust devil (wikipedia, 2018). It is interesting that areas inside of viereckschanzen are more hot then surrounding areas. Potentially great to initiate potential dust devils. Location of Moses Tabernacle was also very promisable for such phenomena. Dust devil could be in principle related to the Pillar of Cloud mentioned in Exodus. Pillar of fire was also possible in similar way. „A fire whirl or swirl, sometimes called fire devils or fire tornadoes, can be seen during intense fires in combustible building structures or, more commonly, in forest or bush fires. A fire whirl is a vortex-shaped formation of burning gases being released from the combustible material. The genesis of the vortex is probably similar to that of a dust devil. As distinct from the dust devil, it is improbable that the height reached by the fire gas vortex is greater than the visible height of the vertical flames because of turbulence in the surrounding gases that inhibit creation of a stable boundary layer between the rotating/rising gases relative to the surrounding gases (Wikipedia, 2018).“

So, Exodus Pillar of Cloud and Pillar of Fire could be explained by Vortex phenomena and most probably could be created and controlled by Moses.

„These electrical fields assist the vortices in lifting materials off the ground and into the atmosphere. Field experiments indicate that a dust devil can lift 1 gram of dust per second from each square metre (10 lb/s from each acre) of ground it passes over. A large dust devil measuring about 100 metres (330 ft) across at its base can lift about 15 metric tonnes (17 short tons) of dust into the air in 30 minutes. Giant dust storms that sweep across the world's deserts contribute 8% of the mineral dust in the atmosphere each year during the handful of storms that occur. In comparison, the significantly smaller dust devils that twist across the deserts during the summer lift about three times as much dust, thus having a greater combined impact on the dust content of the atmosphere. When this occurs, they are often called **sand pillars** (Wikipedia, 2017).

The concept of a **vortex engine** or **atmospheric vortex engine (AVE)**, independently proposed by Norman Louat and Louis M. Michaud, aims to replace large physical chimneys with a vortex of air created by a shorter, less-expensive structure.

Michaud's patent claims that the main application is that the air flow through the louvers at the base will drive low-speed air turbines, generating twenty percent additional electric power from the heat normally wasted by conventional power plants. That is, the vortex engine's proposed main application is as a "bottoming cycle" for large power plants that need cooling towers.

The application proposed by Louat in his patent claims is to provide a less-expensive alternative to a physical solar updraft tower. **In this application, the heat is provided by a large area of ground heated by the sun and covered by a transparent surface that traps hot air, in the manner of a greenhouse.** A vortex is created by deflecting vanes set at an angle relative to the tangent of the outer radius of the solar collector. **Louat estimated that the minimum diameter of the solar collector would need to be 44+ metres in order to collect "useful energy". A similar proposal is to eliminate the transparent cover. This scheme would drive the chimney-vortex with warm seawater or warm air from the ambient surface layer of the earth. In this application, the application strongly resembles a dust devil with an air-turbine in the center (Wikipedia 2018).**

The genesis of Michaud's project, which began as a hobby in 1969, wasn't to produce energy at all: **He was aiming for water.** If you could heat air and then capture the condensation as it cools, he thought, it might offer an alternative to conventional distillation. That didn't pan out. But when Michaud read about how the atmosphere is warmed from the bottom and cooled from the top, he thought, "Oh! That's why we're producing energy in tornadoes." Creating a tornado sounds pretty easy, to hear Louis Michaud tell it. All you've got to do, he says, is "produce warm air, give it a spin, and basically have it rise." He has built machines that do this—and of course, it wasn't quite so easy. With prototype after prototype of his Atmospheric Vortex Engine, the Ontario, Canada-based engineer set out to prove that humans could make their own twisters. He's done so on a small scale, creating narrow, wispy swirls easily dispersed by a strong wind. To power entire communities, though, it would take a much larger and stronger vortex—30 meters (98 feet) wide and 14 kilometers (8 miles) tall, Michaud says, adding that the force wouldn't be dangerous because it would be stationary and controlled. He envisions funneling waste heat from a power plant, for example, into his system; the spinning air would power a turbine as it naturally rises through the atmosphere (Nunez, 2015).

V. CONCLUSION

Potential of atmospheric vortex engines is enormous in a way of potential weather influence what is subject beyond the scope of this paper. Real potential function of viereckenchanges in this way should be investigated. While there is almost no doubt that such structures had function to hold back and produce water on a big scale. Such constructions can be installed for such reasons on dry lands to catch rain water while enhanced by atmospheric vortex engines or atmospheric water generators. Other option is that viereckenchanges worked as weather influencers and cloud makers with help of radon or made atmospheric vortex engines more efficient by their potential ability to create magnetic field, however such topics are above scope of this paper.

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