‘Conventional Wisdom’ and Academia.

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Abstract.

It might, and indeed should, be of interest for practicing scientists to wonder how and why some theories are followed up while others are seemingly dismissed before being even properly examined or checked. There are many examples which could be cited in order to examine this question but here attention will be focused on three such examples – one from each of the last three centuries. A further speculation regarding how the attitudes seemingly exposed in these three examples might be affecting modern ideas concerning climate change will be addressed and several myths concerning this particular topic will be brought to light..

Introduction.

It is now nearly twenty years since *Exploding a Myth*[1] was published but, in the intervening period, little seems to have changed in the world of scientific research and publishing. As already stated, present day practising scientists should be interested in precisely why some apparently reasonable theories are summarily dismissed while others, which obviously conform to what has been termed ‘conventional wisdom’, are accepted and promoted seemingly without serious questioning. Several examples were cited in the above mentioned book and here, although two discussed previously are included, a third, historically occurring between the other two, is brought in to widen the argument somewhat because of the totally different area of science involved as well as introducing other external factors.

The Waterston Affair.

The affair concerning Waterston and the kinetic theory of gases is well documented in Brush’s excellent, and eminently readable, two volume work *The Kind of Motion We Call Heat*[2] but, briefly, Waterston was a British scientist who worked out elementary kinetic theory for himself but totally failed to gain any recognition for this even though his work predated the independent work of Maxwell by close on fifty years. In 1917, Schuster and Shipley claimed, in their book *Britain’s Heritage of Science*[3], that “Waterston probably furnishes the most conspicuous example of a long-continued neglect of work which would have marked a great advance in knowledge had it been recognised at the time of its maturity”. In the end, it was Lord Rayleigh who eventually

discovered Waterston's original article, *On the Physics of Media that are Composed of Free and Perfectly Elastic Molecules in a State of Motion*, buried in the archives of the Royal Society of London. As secretary of the said society at that time, he had little difficulty in retrieving the manuscript and ensuring that it was published in the Philosophical Transactions of the society in 1892, forty-seven years after it was first submitted and, tragically, some nine years after Waterston's death. However, at this point in time, what seems particularly relevant, especially in the present context, is some of the content of Lord Rayleigh's quite lengthy introduction to the paper as printed in the Philosophical Transactions[4]. He discusses the history of the paper briefly but, on page 3, states that "the history of this paper suggests that highly speculative investigations, especially by an unknown author, are best brought before the world through some other channel than a scientific society, which naturally hesitates to admit into its printed records matter of uncertain value. Perhaps one may go further and say that a young author who believes himself capable of great things would usually do well to secure the favourable recognition of the scientific world by work whose scope is limited, and whose value is easily judged, before embarking upon higher flights." This, and more in his introduction, may reasonably be viewed as a scarcely veiled condemnation of the refereeing processes in place at the time of Waterston's original submission. However, it may also be viewed as a piece of very sound advice to young researchers these days as well, - particularly if one expands his remarks to include the prestigious academic journals as well as the learned scientific societies. It does appear, however, quite clear that what might be termed the cancer of 'conventional wisdom', has been around in learned scientific circles for quite a long time. It is, no doubt, a vain hope to think it might go away but, at least if the spectre is made public, its influence may be reduced although consideration of the two following cases might seem to indicate that that is still a remote possibility.

Royal Rife and his Universal Microscope[5].

Stemming from the earlier years of the twentieth century, the story of Royal Raymond Rife still provokes controversy, with some proclaiming him an unrecognized genius while others believing he didn't achieve what is claimed in his name.

Reputation is almost akin to truth itself in science. Science is no different from any other human enterprise, and it is affected by human frailty and hubris. There is a paradigm known as pleomorphism which has been rejected. Disease processes are sustained by way of transformations in biological structures such as cell types which are, therefore, themselves *processes.* Pleomorphism is defined as: The assumption of various distinct forms by a single organism or species. (Dorland's *Illustrated Medical Dictionary*). However, orthodox theory is monomorphic, and does not acknowledge this long observed notion of transformative biological processes. Many deduced pleomorphism to be valid long ago. Pierre Bechamp was one of them. Louis Pasteur had staked his reputation on the converse view. Bechamp deduced after years of detailed study, that bacteria could change form. Rod like structures, for instance, could become spheroidal but, even further, he noted that the size of these organisms could also vary and devolve into smaller organisms, which were unseen, that he called *microzymas*. This point is crucial. However, Pasteur's reputation was great and Bechamp, whose work was later proven correct, was soundly crushed and his ideas excluded from accepted practice. The paradigm science laboured under for much of the 20th century was thereby hobbled. Thomas Rivers of the Rockefeller Institute derived technical scientific distinction regarding the reproduction of a virus

which, although false, cemented his lauded place in the discipline of virology. He introduced the notion that a virus requires *a natural cell* in which to reproduce. His aggressive personality and great monetary resources made him impossible to disagree with, although he was wrong. Dr. Arthur Kendall was unable to defeat Rivers's powerful reputation and formidable personality, but did prove himself scientifically correct by culturing virus strains in an artificial "K Medium" of his own design, and he provided assistance to Royal Rife, who would demonstrate the correctness of the rejected pleomorphic paradigm, and prove over and over that *filter-passing organisms*, meaning very tiny pathogens which are able to pass through filters and may cause full blown disease such as cancer, could be derived from cancer tumours. Rife, would soon discover the impossibly small "invisible" cause of cancer, and allow its direct observation *in a living state* with a new type of microscope which is still unequalled today, and also uncover the lethal frequencies to apply using a specific new instrument to devitalize the tiny bug, which kills man. For this, he would be personally ruined and his work suppressed, at unimaginable human cost.

There are still many who feel Rife could not have produced an optical microscope with the claimed magnifications and, unfortunately, it is believed that no example remains in existence. However, it should be remembered that Rife was working after the technique of heterodyning had been found and utilized . On top of this biophotons had also been discovered and so the possibility is that Rife was able to incorporate these two new pieces of scientific knowledge to enable him to produce a new supremely powerful optical microscope. Also of course there is still existing testimony from respected academics of the day that, using Rife's microscope helped them view things previously hidden from human eyes.

It is claimed that, in 1932, Rife found the cancer virus and that, in 1934, he would cure cancer in humans using a frequency instrument he himself designed. Rife began using Dr Arthur Kendall's K Medium in 1931 to attempt the isolation of the cancer virus from breast tumours. The medium and microscope in this case, were not enough but a fortunate accident whereby he irradiated a sample inadvertently proved to be a decisive advantage, allowing the virus to be visualized. The incredibly small and virtually invisible structure had a breadth of one twentieth of a micron, and showed up under the microscope as purple/red in colour. The experiment was then repeated 104 times, and thus confirmed. Four distinct forms were observed, distinct forms of the same organism. That organism, the filter passing "BX" as he called it, could reliably produce cancer in laboratory animals, as was repeated 300 times. This same organism could be transformed, depending upon the conditions and media used, into different structures found in cancer patients, - a fungus, or as was later shown into bacillus coli! Pleomorphism was correct. Next he painstakingly determined the Mortal Oscillatory Rate to which the BX was attuned, and used the frequency instrument to destroy the BX. He then inoculated no less than 400 animals with filtered BX preparations, created tumours and cured those animals *over 400 times*, before attempting the first human case. Rife, was a careful and meticulous scientist.

Royal Rife was a patient, genteel and kind man, an intellectual, engineer and scientist. The general scientific world combined with that of commerce would prove too much for him. His work is now largely forgotten although, as is recorded elsewhere [see 5], others did try to build on his pioneering efforts. Was Rife correct? Did he discover a cure for cancer? Unfortunately we cannot know the real answer to those queries but it can only be counted as a human tragedy that, unless someone unearths some previously hidden material or resurrects Rife's technique, we'll never know the answers to those important questions.

Santilli and Hadronic Mechanics.

In the very last paragraph of his well-known book on quantum mechanics[6], the Nobel Prize Winner Paul Dirac states that:

> "It would seem that we have followed as far as possible the path of logical development of the ideas of quantum mechanics as they are at present understood. The difficulties, being of a profound character, can be removed only by some drastic change in the foundations of the theory, probably a change as drastic as the passage from Bohr's orbit theory to the present quantum mechanics."

This is a powerful statement by an eminent, highly respected theoretician but echoes accurately concerns which have existed about quantum mechanics since the subject was born. This is not to decry its enormous achievements in the intervening years but merely to draw attention to the fact that it, like all other theories, cannot be accepted as the final answer; again like all other theories, it is not complete and depends crucially on any assumptions made in its beginnings. Very often the queries about quantum mechanics have revolved around the role of the observer and over whether or not quantum mechanics is an objective theory. One man who has considered these points is Karl Popper, one of the best known philosophers of science. Contrary to the so-called Copenhagen Interpretation, he expresses the view that the observer, or as he prefers to call him, the experimentalist, plays exactly the same role in quantum mechanics as he does in classical physics – that is, he is there to test the theory. As has been noted elsewhere, a great many eminent physicists have switched allegiance away from the pro-Copenhagen camp over the years. However, where does Popper fit into anything to do with Hadronic Mechanics? Quite simply, the answer lies in the fact that it was in his 1982 book[7] that he, Karl Popper, drew attention to the thoughts and ideas of Ruggero Santilli. In the 'Introductory Comments' to his book, Popper reflects on, amongst other things, Chadwick's model of a neutron. He notes that it could be viewed and indeed was interpreted originally as being composed of a proton and an electron. However, again as he notes, orthodox quantum mechanics offered no viable explanation for such a composition. Hence, in time, it became accepted as a new particle. Popper then notes that, around his (Popper's) time of writing, Santilli had produced an article in which the "first structure model of the neutron" was being revived by "resolving the technical difficulties which had led, historically, to the abandonment of the model". It is noted that Santilli felt the difficulties were all associated with the assumption that quantum mechanics applied within the neutron and disappeared when a generalised mechanics is used. Later, at the end of section IV of his 'Introductory Comments', Popper makes the following assertion:

> " I should like to say that he (Santilli) – one who belongs to a new generation - seems to me to move on a different path. Far be it from me to belittle the giants who founded quantum mechanics under the leadership of Planck, Einstein, Bohr, Born, Heisenberg, de Broglie, Schrodinger, and Dirac. Santilli too makes it very ¨ clear how greatly he appreciates the work of these men. But in his approach he distinguishes the region of the arena of incontrovertible applicability of quantum mechanics (he calls it atomic mechanics) from nuclear mechanics and hadronics, and his most fascinating arguments in support of the view that quantum mechanics should not, without new tests, be regarded as valid in nuclear and hadronic mechanics, seem to me to augur a return to sanity: to that realism

and objectivism for which Einstein stood, and which had been abandoned by those two very great physicists, Heisenberg and Bohr".

Obviously, these comments of Popper will not be too well-received by some but, at the very least, they provide much food for thought and, considering his own well-deserved reputation, should convince people to assess Santilli's contributions with open minds at the very least.

As stated above, in more recent times, one man who has worried about the extent of the claims for much of conventional theory is Ruggero Santilli. He has devoted his life to studying and attempting to extend the theory to cover situations to which it was not, in its usually accepted form, truly applicable. The fact that it is, at the very least, not applicable in certain cases is something which is hidden from the public and from most students and Santilli's investigations have placed him squarely in opposition to the 'godfathers' of 'conventional wisdom'. All this has put him at a grave disadvantage in the scientific world where questioning the currently accepted views on basic theory is still a perilous route to follow just as it was in the days of Waterston. It might be remembered that Lord Rayleigh opined that, ignoring Waterston's work on the kinetic theory of gases, had probably delayed advances in the field by a great many years. Again as mentioned above, this scientific blunder is well documented in Brush's two volume work *The Kind of Motion we call Heat*[2]. As already indicated, Ruggero Santilli has dedicated his life to examining the bases of not just quantum mechanics but relativity as well, feeling both theories to be incomplete.

Santilli's investigations have led, in recent years, to possibilities for new clean energies and it is this which is now so important to consider, especially at this time when the world is so troubled by the depletion of energy stocks and worries about environmental effects of the energy sources presently being utilised so widely. This whole problem of future energy supplies is probably far more serious than usually imagined. Present demand is increasing but, when countries such as those of both the Indian sub-continent and of Africa come on line fully and require as much energy as the countries of the present west, that demand will escalate enormously. Given the present state of orthodox fundamental knowledge, the only realistic solution to this problem is presented by nuclear power. To many, this is not an acceptable option. Alternatives such as solar power, wind power, geothermal energy, wave energy, and others are all put forward but, in truth, these in total would come nowhere near satisfying the probable future demands for energy. No; as has been pointed out on more than one occasion, the only realistic answer at the world's disposal at present is nuclear power[8]. However, nuclear power is felt to pose two major problems and both are concerned with safety. The safety of the actual power stations is, not unreasonably, a tremendous worry for many. This is accentuated by incidents such as the Three Mile Island problem in the U.S.A. and, more recently, the disaster at Chernobyl. However, it is only the latter case that proved a true disaster; the first was fundamentally contained by the safety systems in place. There is little doubt that, provided adequate funds are made available, nuclear power plants can be made extremely safe, although, as with all man-made structures, no-one can guarantee complete safety of anything and, whether those in authority like to admit it or not, genuine accidents will, and do, occur. Therefore, there can be no room for complacency but, if a sensible number of safety measures are incorporated into the plant, nuclear power stations should be safe.

The disposal of nuclear waste is another matter, as has been highlighted by all the problems being faced in the U.S.A. over its proposed storage facility in Nevada. This brings the story back to

Santilli for another outcome of his work has been the emergence of a possibility for the safe disposal of nuclear waste in-house; by which is meant, the safe disposal of the waste without any need for transportation[9]. The idea is still only at the theoretical stage and, as Santilli has been requesting for some time now, requires the performance of about three experiments to see if the theory actually works in practice. Such experiments would not be cheap to perform but, considering the enormous sums spent on some elementary particle work, the cost would not be too great and, if successful, the ensuing benefit for mankind would truly be out of all proportion to that cost! Most will ask at this point why these experiments haven't been performed. This is a difficult, if not impossible, question to answer, but it may be noted that, on the one hand, the theory behind all this does not conform to 'conventional wisdom' and does, in fact, raise questions about the range of validity (at least) of the widely accepted theories of relativity and quantum mechanics, while, on the other hand, the theory has led already to the production of the new clean fuel, 'magnegas'! Hence, although the theory may be abstruse, may contain elements which some feel unacceptable, and may conflict with 'conventional wisdom', nevertheless something concrete has been produced already which can be, and has been, used. The theory definitely appears to have had a readily identifiable success already. On the other hand, enormous profits are being made by people in the business of disposing of nuclear waste using the current somewhat crude and unsatisfactory methods. So the question arises as to whether, in some sense, 'conventional wisdom' and 'big business' have combined to prevent the performance of these experiments which, if successful, could have such a dramatic effect on both. Santilli has extended his work to cover a huge number of seemingly disparate fields but, as far as much of his basic work is concerned, he derived a large amount of inspiration from a relatively small number of sources.

From the point of view of physics, it seems that Santilli obtained inspiration from early ideas of Rutherford. It was in 1920 that Rutherford[10] postulated the existence of a new particle, which was, in essence a 'compressed hydrogen atom'; that is, it was composed of an electron compressed entirely within the proton. This he called a neutron. Presumably Rutherford thought that, when a hydrogen atom is compressed, for example, in the core of a star, the high pressures involved could result in it being reduced in size to that of a proton, with an electrically neutral particle emerging finally. Twelve years later, Chadwick[11] established the existence of the neutron experimentally. However, Rutherford's original conception of this particle was dismissed by many of the founders of quantum mechanics for a variety of seemingly good reasons at the time: - the model would require a positive binding energy; both constituents possess spin ½ and so, the resulting particle would not be permitted to have spin ½ by normal quantum mechanics; orthodox quantum mechanics would also not allow the correct magnetic moment to follow in this model. Hence, the rejection of Rutherford's model of a neutron and this heralded a change in the direction of physics' research. Up to that time, physics had been based on the notion that the constituents of so-called bound states have to be capable of being isolated and identified in laboratories. The rejection of Rutherford's conception appears to have altered this view. This then was the spur for Santilli and, having devised some totally new mathematical techniques, he first succeeded in producing a consistent model of the meson, π^0 , as a bound state of an electron and a positron. This model is not possible in conventional quantum mechanics for a number of reasons, one of which concerns binding energy. Quantum bound states possess negative binding energies and this implies a total mass less than the sum of the constituent masses. For a π^0 meson, this would imply a rest energy appreciably less than its actual rest energy of 135 Mev. This problem, as are all others, is resolved by hadronic mechanics or, at least, that is the claim with all the evidence clearly available for

examination by those with a mind so to do. The model Santilli proposes does, in fact, explain all the characteristics of the said particle – zero spin, electrically neutral, null magnetic moment, a rest energy of 135 Mev, a mean-life of approximately 10−16 sec., a charge radius of about 1 fm (that is, 10^{-15} m), decay according to $\pi^0 \rightarrow e^- + e^+$ - and this model of the smallest of hadrons has now been extended successfully to all mesons. Further, although the theory does not view quarks as actual physical particles, but rather as mathematical objects with a composite structure, this new model for hadrons does prove compatible with the current quark theories, always assuming that quarks have a composite structure. For those interested, further details of this model may be found in a variety of publications but especially in volume 4 of the Journal of New Energy[12]. In fact this reference is a veritable goldmine of information on this general topic of hadronic mechanics and its consequences both for physics itself and probably for mankind as a whole through its consideration of the possibilities offered by the theory for alternative new clean energies.

Central to all of this was the generalization of Heisenberg's uncertainty principle by hadronic mechanics (for details of this refer to the summary in reference below[13]) because in its absence none of this would have been possible and the above mentioned new method for the recycling of nuclear waste could never have been contemplated.. Hence, it is his success in using the new hadronic mechanics to resurrect the Rutherford model for the structure of the neutron successfully which could turn out to be Santilli's most important achievement. This model recognises a neutron as being composed of a bound state of a proton and an electron at a distance of 1fm; that is, at a distance of 10^{-15} m. As mentioned earlier, such a model is prohibited by conventional quantum mechanics, so, if Santilli's ideas are valid, what are the consequences for physics? The answer is, quite simply, enormous! The abandonment of the original approach to the structure of physical particles will have had a profound and far-reaching effect on research in the area of particle physics obviously. However, it is the possible ecological implications which are staggering and of so much direct relevance to absolutely everyone. The orthodox approach has conceivably prevented the study of the neutron as a major source of clean energy and actually seems to have obstructed the study of new forms of clean nuclear energy.

As for the actual proposal for a safe method of disposal of nuclear waste, that has been treated in a number of articles and more details may be found in these. The basic idea revolves around the fact that the nuclei concerned are large and naturally unstable. One idea is to expose the highly radioactive nuclear waste to an intense, sharply pulsed, coherent flow of photons with the required resonating frequency of 1.294Mev. It is felt that this may be achieved via a synchrotron of about three meters diameter; - a size which could be accommodated in nuclear power plants. A typical example is provided by uranium ($_{92}U^{238}$) which has a life-time of the order of 10^9 years. A double stimulated transmutation of this element could change it into Plutonium ($_{94}Pu^{238}$). Again, this is an unstable quantity and has harmful emissions as well, but its life-time is a mere 86 days and it could well be retained under suitable shields for that period of time. It may be superfluous to draw extra attention to this point, but it is worth noting the different life-times involved here – 86 days as against 10^9 years! The phenomenal advantage of this stimulated transmutation is immediately evident. Will it work? The theory certainly suggests that it should, but only experimentation will give the actual answer to that question. Possibly the bigger, more relevant, question to ask at this time is whether or not the scientific community and national governments are prepared to finance the experiments necessary to test this thesis? There is little doubt powerful forces, both within the scientific establishment and in big business, will violently oppose the performance of these but

can the possibility of the existence of such a prize be ignored any longer? As has been stated above, Santilli derived much inspiration for much of his work from the earlier ideas of Rutherford but that was merely one source of inspiration for the work that has occupied his entire working life.

Conclusions and Further Comments.

In the first of the above examples the original writer (Waterston) was totally vindicated eventually due to the inquisitiveness and persistence of Lord Rayleigh – a man with both the power and influence to reveal what had happened years before. As far as the other two cases are concerned, all that is being attempted here is to bring to attention two cases where possible solutions to pressing problems have been advanced but never examined in an open minded, truly scientific manner. This, of course, raises the awkward question of how often this sort of thing has occurred and what factors have contributed to it.

As far as the case of Royal Rife is concerned, reading what has been written on that subject would suggest that personalities with vested interests played a crucial role. There is also the question of whether or not big pharmaceutical companies played a part in the belief that a successful non-drug treatment for a range of conditions might be emerging. Who knows? However, even a cursory glance through the available literature on this subject indicates that his work has never been fully and openly examined and what examination by highly qualified people did occur has been hidden from public view. Much the same is true of Santilli's work where some have openly, but incorrectly, claimed it to have been discredited. In fact, at least some of his work has been proved correct in that there is actual physical evidence to support him, for example with the production of the green fuel magnegas. It might be noted also that, as far as his proposal concerning a safe method for dealing with radioactive waste is concerned, the performance of approximately three experiments could answer that question once and for all. It makes one wonder if his detractors are afraid of the results that might be obtained?

Here just three examples have been discussed where one must be left wondering just how scientific research proceeds and exactly why some theories are supported come what may while other totally reasonable ideas are dropped for no immediately apparent reason. This question is always an important one to consider as is seen from the examples cited but, in these present times, it is possibly even more relevant. The public which, after all, ultimately funds most scientific research, is presently being assaulted from seemingly all sides in the cause of stopping climate change. Here again, only those who follow the presently accepted line have air time. There is so much that is kept hidden from the general public and one favourite tactic is to label any who question the popular view 'climate change deniers'. This, of course, is largely untrue. Most in this category are complete believers in climate change but question the reasons behind it. They also question the solutions being put forward; solutions which involve great expense for ordinary people but are not always properly investigated or costed. It might be noted at this point that the contents of the carefully constructed article by Professor George Cole cited earlier[8] are never mentioned. His assessment of the future energy needs of the entire world is something which should have been recognised years ago and appropriate action taken. As he pointed out quite clearly, sources of energy such as wind and solar can play a part but are not sufficient to satisfy present, let alone future, needs; the answer, given our present state of knowledge, lies solely with nuclear power produced by properly constructed power stations. However, this whole issue of climate change is

yet another area where only selected information is released and the media is playing a major part in this, so much so that the physicist Steven Koonin[14] has pointed out that the media is largely responsible for much of the distorted view presented to an unsuspecting, unscientific public.

However, it might be noted also that other well-known scientific facts have been withheld from the public domain and these are all facts immediately available to the media. It was in 1896 that Svante Arrhenius, a Swedish Nobel Prize Winner, made the assertion that the Earth was thirty degrees warmer because of so-called greenhouse gases. The calculation was questioned within ten years by Professor R. W. Wood[15] and his (Wood's) view was upheld many years later as a result of the Apollo missions. During these missions, thermometers had been left on the Moon's surface and their results, quietly published by NASA at the time, showed a thirty degree temperature excess above the expected level. According to Arrhenius's calculations this excess should not be present since there is no air and, therefore, no greenhouse gases on the Moon. As Philip Foster[15] has pointed out, Arrhenius's mistake was to treat the earth's surface as 'thin' in order to simplify his calculations. He totally ignored the fact that some of the heat absorbed on the surface would be conducted and stored below the surface. The Earth really acts as a storage heater and, as a result, temperatures do not fall at night as far as theory predicts. All of this should have awakened caution in the minds of those dedicated to the doctrine of 'global warming' and, incidentally, that of man-made climate change.. The uncomfortable truth is that this climate change disaster supposedly facing our World is due to an error made well over 100 years ago. This must be rectified as a matter of urgency. It will mean some loss of face for some and some industries, founded on the sand of misinformation, may flounder but those are unfortunate consequences following a questionable route initially. As Philip Foster[16] has commented, 'science can maybe recover from this debacle but it cannot be treated as some kind of infallible oracle ever again'.

As a final point, it might be of interest to note that all this furore really started following the actions of a Swedish school girl. Is it merely a coincidence that she happens to be a descendent of Svente Arrhenius whose initial error precipitated this whole problem and is known by some as the 'father of climate change'?

Some of the points in this final section will probably be regarded by some – maybe many – as highly controversial but the truth is simply that some important facts relating to this question of climate change have been suppressed. Until everything is up for open-minded, fair discussion, doubts will continue to circulate, especially with human nature being what it is. In the end, though, the truth will out – even the fact of Arrhenius's unfortunate, but possibly understandable, mistake. What cannot continue is the seemingly deliberate hiding of this known error because the cost to all is fat too high and immediate.

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