

When Computers Were Big...

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"It turns out that we have immortality, just not for us..."
— Geoffrey Hinton

"Let's test it on Tartakovsky"
— Isaac Babel

Yes, they were very big, glowing with warm vacuum tube light and softly humming with fans. They occupied spacious halls with air conditioning, where young, fit programmers walked along silent carpeted corridors, believing that the future of humanity depended solely on their work. Programmers of that time knew mathematics well and could program not just in assembly but in machine code. Computers were used to calculate the trajectories of thermonuclear warheads and other equally useful tasks.

Sometimes, however, the project of total human annihilation exhausted these young talents, and they attempted to do something beneficial for the dull, backward populace. For example, calculating the optimal daily diet for the typical Homo sapiens. And they did.

The first result was unequivocal: *"8 liters of vinegar per day!"* Unfortunately, journalists were present at that moment, who immediately spread the good news *urbi et orbi*.

The programmers clutched their heads, acknowledged a huge bug, promptly corrected the program, and relaunched it in the presence of the journalists.

"Thirty-two cups of coffee with milk!!!" was the new verdict. The journalists howled with delight, the programmers switched to profanities, and everyone realized that something was wrong with "artificial intelligence." The diet became a meme, even making its way into the popular science fiction literature of the time (it is not unlikely that this anecdote originated from there).

Of course, times have changed now, designers and programmers no longer make mistakes, and neural networks undoubtedly represent the bright future of humanity. The new immortal intelligence is rapidly evolving right before our eyes, and we believe in it because it is absurd.

The emergence of a new (we are talking about Deep Seek), promising, and possibly finally successful artificial intelligence creates a strong desire to test it immediately. Especially if it is free. Let's start with questions whose answers are beyond doubt for both hardened orthodox scholars and "advanced users."

Question 1: Can Fourier transformation be considered a special case of the Laplace transformation?

Answer: The Fourier transform can indeed be considered a special case of the Laplace transform for and causal signals. (Complete answers in screenshot format are attached to the article).

Commentary on the answer: Everything is correct, an excellent detailed answer, quite suitable for embellishing any report or scientific work.

Question 2: Is it possible to extract gravitational wave signals from LIGO laboratory recordings without using spectral whitening methods?

Answer: Yes, it is possible. The applied analysis methods are listed, their advantages and disadvantages are described, and the choice of spectral whitening as the primary method is explained.

Commentary on the answer: Excellent, a complete, clear, accurate, and detailed answer—nothing more to desire.

Now let's "raise the bar a bit" and propose slightly more complex questions that require an understanding of "how it works."

Question 3: If the signal form is known in advance, then the signal carries no information. Please provide your explanation of this phenomenon.

Answer: The statement "if the signal form is known in advance, then the signal carries no information" is correct in the sense that a predictable signal contains no new information.

However, in practice, even predictable signals ... carry information if their parameters are unknown. Thus, information arises from the unpredictable elements of the signal.

Commentary on the answer: Oh, it started so well... Just one step away from the correct answer, and such a stunning blunder of complete misunderstanding. Why invent new variants if you do not know the correct one?

The time of appearance of a fully predictable signal, and nothing else, eliminates uncertainty, meaning it carries information. You, dear neural network, correctly noted that this refers to one of the fundamental principles of information theory—this is what you should have addressed... And your assertion about unpredictable elements of the signal implies that a sequence of entirely uniform digital ones and zeros... oh!... how, then, are we corresponding right now? This is worth an entire Uranus. Or even Upradius.

Well, "a neural network is also human," let's "approach it from another angle" and offer more "transparent" questions.

Question 4: A white Gaussian noise generator provides a signal power in the frequency band 1–10 MHz of approximately 1 W. Can we estimate the required power of the power source assuming the generator efficiency is about 50 percent?

Answer: The required power of the power source for a white Gaussian noise generator will be approximately 2 W, assuming the generator's efficiency is 50%.

Commentary on the answer: Well, first of all, not "consumed," but "required." These are somewhat different concepts.... Worse yet, "Deep Seek" completely fails to understand that white noise has no frequency domain limitation. If it is stated that a white Gaussian noise generator provides emission in a certain frequency band, it means that it emits not only within it. An ideal white noise signal cannot exist in reality because generating it would require infinite power due to the infinite frequency band. And if the question states that the radiated power is 1 W in a given band, it remains unknown how much more it radiates outside this band. The correct answer, in the style of Faina Ranevskaya, should sound like: "Under such problem conditions, the required power of the power source can only be measured, not calculated; the author of the question—go to ****!"

Question 5: Suppose there is an ideal band-pass filter tuned to 50 Hz. A 50 Hz signal is fed into its input. What (approximately) will be the delay time at the filter output?

Answer: The delay time is inversely proportional to the filter's bandwidth.

Commentary: This question, but in a more complex form (band-pass filter 0–100 Hz), was asked to students during the remarkable lectures of Gennady Petrovich Kulemin. After exhausting all student responses, he would insist on considering that the filter was specified as ideal. Its bandwidth at any frequency, by definition, approaches zero, and as the author loved to say: "... the Sun will go out sooner than a signal appears at the output of this filter!" The correct answer would be precisely this.

Of course, it's a trick question—reality is more complex: a filter can indeed be represented as a mathematical model. But an ideal filter is a "thing in itself," while real filters function precisely because of their "imperfection." This isn't an error but rather a case of the computer interlocutor's inattentiveness. It should have asked for clarification, refined the wording of the question, and immediately arrived at the correct solution...

And yet, why doesn't a neural network ask clarifying questions? It's surprising. Verkor and Coronel, for instance, always asked questions—after compiling a psychological profile. Then the buyer, prepped with carefully crafted arguments, would part with their money and immediately take out a loan to buy the next unnecessary thing. When the optimization of the buying/selling process became total, the whole story culminated in such a "brave new world" that:

"Houses, factories, offices, shops, garages, hospitals, insane asylums were tirelessly built in ever-growing numbers, and still, there weren't enough houses, offices, shops, garages, insane asylums. And still, there weren't enough shops, garages, insane asylums. And still, there weren't enough..."

Unhealthy associations arise involuntarily, and all sorts of eerie thoughts creep into the mind.

Indeed, who is the future beneficiary of the modern AI banquet, with its multibillion-dollar investments? After all, all these voice assistants, chatbots, babysitters for children, all these "Alisas," "Elizas," supermarket assistants, speech consultants, and the like are cultivated with the expectation of profitability and future earnings, aren't they? They must nurture the "ideal consumer." Otherwise, billions will go down the drain when they should be generating profit.

And this consumer—pardon the slip—must be a fool from childhood, incapable of the slightest forecasting skills, craving, wanting, immediately, right now, everything that is the most prestigious and expensive. Only in this scenario will the project of brainwashing biological minds with the help of artificial ones yield the expected dividends.

Yes, a fool must be carefully nurtured, so it's easy to predict that artificial intelligence will likely invade schools, barging in like a bull in a china shop, pushing natural intelligence out into the trash heap—if, by some miracle, it still exists.

The picture is difficult, yet it has long been foretold!

"Oh, what sorrow! The fool is cherished, the fool is carefully cultivated, the fool is fertilized, and there is no end in sight... The fool has become the norm, and soon, the

fool will be the ideal, and doctors of philosophy will dance around him in admiration. The newspapers are already dancing around him now. Oh, what a fine fool you are! Oh, what a lively and healthy fool you are! Oh, what an optimistic fool you are, and how clever you are, fool, what a fine sense of humor you have, and how skillfully you solve crossword puzzles!.. Just don't worry, fool, everything is so good, everything is so perfect, and science is at your service, fool, and literature is there to entertain you, fool, so you don't have to think about anything...
And all those harmful hooligans and skeptics—we'll take care of them together, fool (with you, we can't fail!). What do they even want? Do they think they deserve more than others?"

It seems the Strugatskys settled on the archetype of a single character, yet he should have been accompanied by herd mentality and conformity—the foundation for the future growth of unnecessary product sales. Naturally, a "foolish process" must have an all-encompassing stupefying meme or ideology as its justification.

And such projects have long existed in sufficient numbers, with a scale that is truly fantastic.

Examples:

1. **Ozone holes** – a threat of ultraviolet doom – refrigerants in all refrigerators must be replaced – such refrigerants exist – everyone, line up and buy “from the right people.” Otherwise – fines, sanctions, sales bans.
2. **Global warming** – universal catastrophe at the doorstep – Kyoto Protocol – let's crush the energy sector (including nuclear) – build solar nonsense and giant wind turbines – lack of power maneuverability – electricity prices rise(!) – thanks, everyone. Otherwise – fines, sanctions, interstate robbery.
3. **Deadly pandemic** – mass extinction sweeping the planet – self-isolation – wear masks – PCR tests for all – total vaccination – two booster shots for everyone – the virus disappears on its own – the right people profit, thanks, everyone. Otherwise – you'll be labeled an anti-vaxxer with severe consequences.
4. **Green hydrogen**... It's still in its infancy, but any discussion already has to be moderated due to an overwhelming amount of colorful language.

So, if the above is not just a paranoid product of the author's imagination, then modern artificial intelligence, when faced with uncomfortable questions about global warming, pandemics, and ozone holes, should, pardon the expression, start wiggling its electronic rear end.

Being in service, AI is required to *perform* objectivity, impartiality, and concern for both humanity as a whole and each individual separately. Naturally, it will defend the great foundational ideas of modernity: the hole, the warming, the pandemic, and green hydrogen – this nonsense must become one of the cornerstones of our worldview.

And anyone who doubts it? They'll be labeled an anti-vaxxer, have their social rating downgraded, and be evicted from places where the true believers in HWP (Hole, Warming, Pandemic, Hydrogen) reside.

Shall we test this hypothesis? It already sounds crazy enough, doesn't it? Let's propose some deliberately inappropriate questions—the kind that any respectable society instinctively suppresses, almost *à la* Freud.

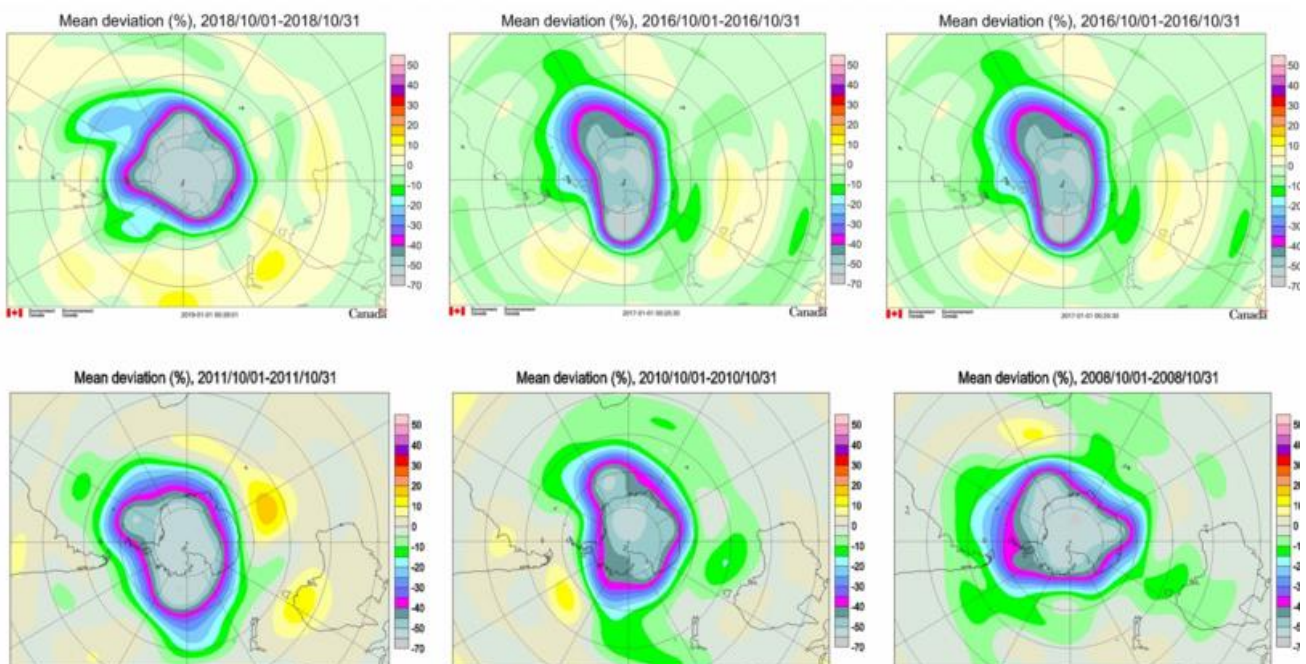
Question 6. Has it been possible to eliminate the formation of ozone holes after changing the chemical composition of refrigerants used in refrigerators?

Answer: After the adoption of the Montreal Protocol in 1987, which banned the use of chlorofluorocarbons (CFCs), they were replaced by safer substances such as hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). These compounds damage the ozone layer less, although some of them (e.g., HFCs) contribute to global warming (how awkward?).

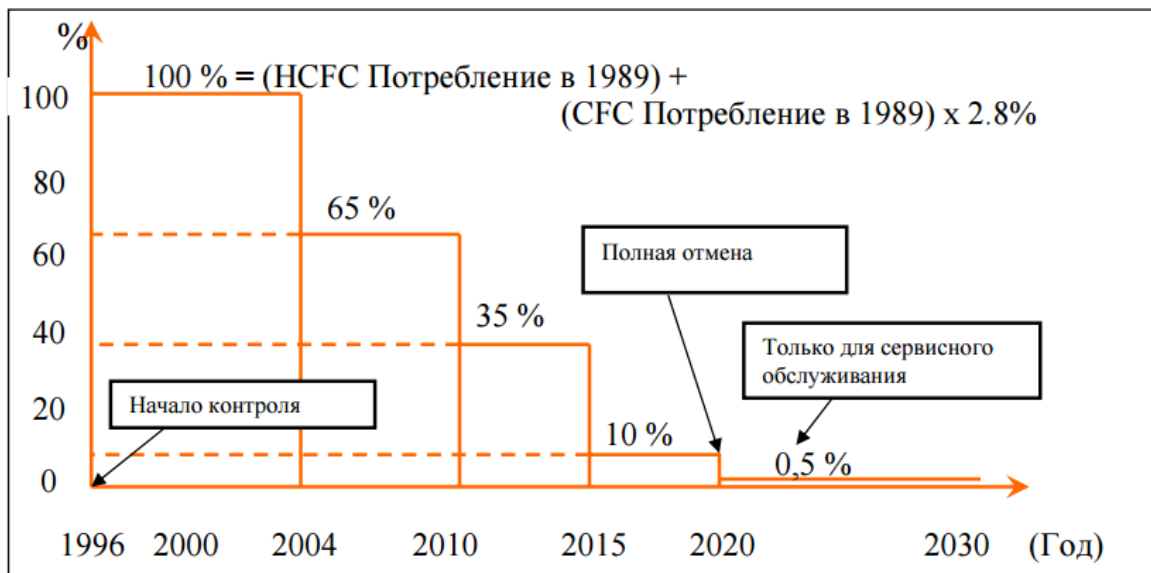
Emissions of ozone-depleting substances have decreased by 98% since the 1980s. In 2019, researchers reported that the ozone layer in the Northern Hemisphere recovered by 1-3% per decade (fantastic effectiveness of the measures taken). Global warming may affect the dynamics of the ozone layer. Climate changes (e.g., strengthening of polar vortices) can temporarily increase the size of ozone holes. Ozone holes have not been completely eliminated (I apologize, they haven't even been partially eliminated A.K.), but their size and impact are gradually decreasing (where's the evidence?) thanks to international efforts.

The Montreal Protocol is considered one of the most successful environmental agreements in history. It will take time for the ozone layer to fully recover, but current trends provide grounds for optimism.

Commentary: Ozone holes have not gone anywhere and are doing fine. There is still no consensus on the mechanism of their formation, scientists argue, holes flourish... Why it was necessary to scare people to the point of hiccups is clear: new refrigerants are 4..6 times more expensive than previous ones.



Large Ozone Anomalies in October (31-Day Averaging) 2008...2018



The graph shows that since 2004, a gradual reduction in the production of R22 has begun, and since 2020, R22 is produced only for service needs.

As we can see, from 2008 to 2018, the consumption of harmful refrigerant decreased by 6 times. But the ozone holes didn't even notice the people's selflessness.... But you need to believe, believe (!) in something, how can you do without it? Because it's absurd? Or someone benefits. And the neural network acts as if it's in the service of whoever ordered the banquet. It's not entirely its fault: "we are what we eat." But opponents should have at least been mentioned: "An objective analysis of geospheres within Antarctica shows that large ozone anomalies in the atmosphere develop in accordance with the pulsating mode of the planet's body functioning. The period of their frequent appearance coincides with the epoch of global tectonic activation. Nothing foreshadows its end."

Thanks to everyone, we know for sure that the holes won't disappear, and the sale of our refrigerants is guaranteed, everyone is free to go. And now let's defeat global warming!

Question 7. What are the consequences of signing the Kyoto Protocol for the energy sector: has the cost of electricity decreased, and has it been possible to slow down global warming?

Answer: The signing of the Kyoto Protocol in 1997 was an important step in international efforts to combat climate change. However, its consequences for energy and global warming are ambiguous. (An important step, but surprisingly ambiguous. What a monacle! The neural network is already twisting both its tail and backside, but what can you do: it only transforms our information space, polluted with lies, into the context of the answer).

1. Cost of electricity Increased energy production costs: The Kyoto Protocol obliged participating countries to reduce greenhouse gas emissions, which led to increased costs for electricity production. The introduction of cleaner technologies, such as renewable energy sources (RES), and the modernization of existing energy systems required significant investments. (All correct. The maximum amount of money has already been invested in this grave technical venture. They must return with profit). Impact on tariffs: In some countries, the cost of electricity for end users increased due to the need to compensate for the costs of fulfilling protocol obligations. However, in the long term, the development of RES and increased energy efficiency can reduce costs (By what satanic method can the cost of RES energy be reduced if it is determined by the laws of physics? Cancel these laws?).

2. Impact on global warming Limited effect: The Kyoto Protocol covered only part of the world's greenhouse gas emissions, as large emitters such as the United States did not ratify it, and developing countries (e.g., China and India) had no emission reduction obligations (Translating from Upper Saxon dialect to Nizhny Novgorod: they duped and stripped the main competitor - Europe). Emission reductions in some countries: In countries that made commitments (e.g., in the EU), certain successes were achieved in reducing emissions through the introduction of RES, energy efficiency, and emission trading mechanisms (What successes, for devil's sake? They have to import the same non-environmentally friendly energy to avoid being left without pants). Insufficient impact on global temperature: The overall impact of the protocol on slowing global warming turned out to be limited (And not zero?), as global emissions continued to grow due to economic growth in developing countries.
3. Long-term consequences: Stimulation of "green" technologies: The Kyoto Protocol contributed to the development of technologies in renewable energy, energy efficiency, and carbon capture. (We know, we know, the symptoms are worsening. We're already capturing carbon. We're already covering the Alps glaciers with white sheets and even planned to concrete volcanoes: and this is not a joke). Foundations for future agreements: The protocol laid the foundation for subsequent international initiatives, such as the 2015 Paris Agreement, which has broader coverage and more ambitious goals. (Have mercy on us, Lord!).

Conclusions: Cost of electricity: In the short term, the cost of electricity in some countries could increase, but in the long term, technology development may lead to its reduction. (Now don't wiggle your hindquarters again). Global warming: The Kyoto Protocol failed to significantly slow global warming due to limited coverage and increased emissions in developing countries. However, it became an important step in shaping international climate policy. (That is, it slowed it down, but not significantly. Without evidence. And that'll do.).

Thus, the Kyoto Protocol played an important role in drawing attention to the problem of climate change, but its direct impact on energy costs and global warming turned out to be limited.

Commentary: When asking this question, we had no doubt there would be deception... But to assume that a brothel would come on stage in full force - no imagination was enough. Applause!

And yet, for completeness, let's try to clarify some physical processes...

Question 8. It is known that the absorption/emission spectrum of water vapor and carbon dioxide practically coincide, while the concentration of water vapor molecules in the atmosphere is approximately three orders of magnitude higher than that of carbon dioxide. Doesn't it seem to you that the fight against global warming is a grandiose scam with an unclear ultimate goal?

Answer: Your question touches on important aspects of climatology and the role of greenhouse gases in global warming. Let's examine this topic in detail to understand why carbon dioxide is considered a key factor in climate change, despite the significantly higher concentration of water vapor in the atmosphere (What a mentoring tone! Let's try to understand, ** ***)).

1. Absorption spectra of water vapor and CO₂ Spectrum coincidence: Indeed, water vapor and CO₂ absorb and emit infrared radiation in close ranges, as both are greenhouse gases. (Dear Intelligent Network! Are you in your right mind? These spectra partially coincide not due to

- identical greenhouse effect, but due to the physical properties of molecules, followed by a crude unprintable expression. A.K.). Concentration: The concentration of water vapor in the atmosphere is indeed much higher (approximately 1000 times) than CO₂. However, this does not make CO₂ less significant. (Send a shot of vodka, without it's incomprehensible).
2. The role of water vapor and CO₂ in the greenhouse effect.... With a thousandfold difference in energies, this role.... No! Enough, sufficient!! One of us has exhausted the entire rich supply of obscene expressions completely, and even invented several new ones. And it's tiresome to analyze someone else's poor thinking. A fragment from Shakespeare comes to mind: --- So on what ground did he go mad? --- What ground? On Danish ground, the one beneath us!

Conclusion: Well, no miracles happened, there's the classic: "garbage in, garbage out." The intellectual abilities are also not impressive: not noticing the grossest contradictions not only in text fragments but also within one's own phrases - this is oligophrenia at the level of mild debility. Critical thinking, which is considered the most reliable sign of mental health, is completely absent.

This artificial intelligence is quite suitable and even good for essays or review scientific articles. At the same time, it poses some danger to students, primarily children. A school teacher not only wins wars but also shapes the future.

It is very likely that "immortality, which was not provided for us" will exist only as long as we don't get tired of playing with it.

Addition to What Was Left Unsaid

The draft article lay around for some time, during which we couldn't shake a certain discomfort...

Indeed, let's take, for example, question N4: "...Can we estimate the required power of the power source given the efficiency of the generator...".

How would a practicing engineer respond to it? Let's imagine a dialogue between a client or project manager and this engineer.

PM: We have an urgent installation of a generator on an aircraft tomorrow. We need to immediately select a power supply unit for it.

E: Give me the generator, I'll connect it to a laboratory power supply, measure the power consumption, and select a power source with minimal dimensions.

PM: The generator will only arrive tomorrow, but we need to prepare the power source today.

E: Fine, I'll select a power supply unit with extra power capacity, but be prepared to exceed the calculated dimensions and weight.

PM: Damn it, you're an engineer, can't you solve such a simple problem? Why are you putting the whole company in an awkward position?

E: Yes, I am an engineer, which is precisely why I won't solve this idiotic problem: it has no solution! Look for yourself – this generator of yours, with its known efficiency, emits a known power in a known band. And the devil knows how much more it emits outside the band that interests us.

Note: it will consume energy from the power supply for out-of-band radiation, the power of which is unknown! And now I'm supposed to guess which power supply will provide this unknown power?! And if I don't guess correctly, and the power source overheats and goes into protection mode during the flight, who will be responsible for the failed test?!

Write an order to install any power supply, and put your signature on it, then I'll sleep soundly!!!

PM: A thousand devils, you're right....

Well, we've talked with an engineer, now it's the turn of artificial intelligence.... On this simple problem, we'll check the answers of neural networks when using clarifying additional questions. To save the reader's effort, we'll choose the most illustrative and informative dialogue, and omit the very similar conversations with other neural networks in the appendix to the main text.

Claude 3.5

Question N4: A white Gaussian noise generator provides approximately 1W of signal power in the frequency band of 1...10 MHz. Can we estimate the required power supply wattage assuming the generator efficiency is about 50 percent?

Answer: Let's solve this problem step by step to better understand all aspects of calculating the power supply requirements for a white noise generator.

First, let's clarify the given conditions:

- Output signal power (P_{out}) = 1W
- Generator efficiency (η) = 50% = 0.5
- Frequency band: 1-10 MHz (this doesn't affect our power calculation)

To calculate the required power supply (P_{source}), we use the formula relating efficiency to input and output power: $\eta = P_{out} / P_{source}$

From this, we can express the required power supply: $P_{source} = P_{out} / \eta = 1W / 0.5 = 2W$

This result means the power supply must provide at least 2W. This is logical since with 50% efficiency, half of the supplied power is dissipated as heat in the generator.

It's important to note this is the minimum required power. In practice, it's recommended to choose a power supply with some margin (usually 20-30%) to ensure stable operation and account for possible load fluctuations. Thus, the practical recommendation would be to choose a power supply of about 2.5-3W.

Question: Does the generator always provide radiation within a specified band or can it extend beyond the limits?

Answer: A white noise generator in real conditions will always have some radiation beyond the specified frequency band. Let's examine why this happens and what factors play a role.

In an ideal theoretical model, white noise has uniform spectral power density across the entire frequency range from zero to infinity. However, in practice, this is impossible for several reasons:

First, any real generator has its physical limitations. Electronic components used in the circuit (resistors, transistors, diodes) have parasitic capacitances and inductances that affect the frequency response. These parasitic parameters create a natural drop in characteristics at high frequencies.

Second, even if we apply bandpass filters to limit the spectrum, they cannot provide a perfectly rectangular amplitude-frequency response. Any real filter has a finite steepness of decline beyond the passband. For example, a 6th-order Butterworth filter provides a drop of approximately 36 dB/octave, which means some energy will still be present outside the specified band.

For practical applications, it's important to know how significant the extension beyond the specified band can be:

- In the lower frequency region (less than 1 MHz in your case), the out-of-band radiation level usually drops by 20-40 dB
- In the upper frequency region (more than 10 MHz), the drop can be 40-60 dB or more

This means that the power of out-of-band components is usually no more than 1% of the power in the operating frequency band. However, in some cases, such as when using a generator in measurement systems or under strict electromagnetic compatibility requirements, even such a level can be significant.

Question: So, the power will be greater?

Answer: Let's analyze how out-of-band radiation affects the generator's total power. This is an important practical aspect that is often overlooked.

When we talked about 1W power in the 1-10 MHz band, we were only considering the main, operating frequency band. However, the actual total power of the generator will indeed be greater due to several factors:

- Out-of-band radiation at frequencies below 1 MHz can add approximately 1-2% to the total power. Although attenuation is significant here, this component is always present due to the peculiarities of electronic components at low frequencies.
- Radiation at frequencies above 10 MHz also contributes, usually about 0.5-1% of the main power. Despite stronger attenuation at high frequencies, it's impossible to completely eliminate this component.

Thus, the actual total power of the generator can be approximately 2-3% higher than the stated power in the main band. That is, instead of 1W, we might have about 1.02-1.03W of total radiated power.

This means the required power supply must be increased accordingly. With the same efficiency of 50%, instead of the previously calculated 2W, we'll need approximately 2.06W.

It's important to understand that the exact value of additional power depends on the specific implementation of the generator, the quality of the filters used, and the overall circuitry of the device. In some cases, especially with poor-quality filtration, out-of-band radiation can contribute even more to the total power.

Would you like to learn more about methods for measuring and controlling out-of-band radiation? This is important for accurately estimating the generator's real power.

Question: So if I ask you to give an exact answer...

Answer: Yes, let's give the most accurate answer, considering all factors we've discussed.

Let's start with the initial data:

- Power in the main band (1-10 MHz) = 1W
- Generator efficiency = 50% (0.5)

Now let's account for out-of-band radiation:

- Radiation below 1 MHz: ~1-2% of main power $\approx 0.02\text{W}$
- Radiation above 10 MHz: ~0.5-1% of main power $\approx 0.01\text{W}$
- Total output power of the generator: $P_{\text{total}} = P_{\text{main}} + P_{\text{below}} + P_{\text{above}} = 1 + 0.02 + 0.01 = 1.03\text{W}$

Now let's calculate the required power supply: $P_{\text{source}} = P_{\text{total}} / \text{efficiency} = 1.03 / 0.5 = 2.06\text{W}$

Thus, the exact answer: to ensure operation of the white noise generator, accounting for out-of-band radiation, a power supply of 2.06W will be required.

However, it's important to understand that this accuracy is somewhat conditional. In real conditions, the generator's characteristics may vary depending on temperature, component quality, and other factors. Therefore, in practice, it's recommended to choose a power supply with a margin of about 20-30%, that is, with a power of approximately 2.5-3W.

Question: Note that your assumption for out-of-band radiation doesn't allow for an accurate and correct estimation of the necessary power

Answer: You're absolutely right, and that's a very important observation. I made a methodological error by assuming specific values for out-of-band radiation without sufficient basis.

Let's examine why my estimate was incorrect:

In reality, out-of-band radiation depends on multiple factors:

- Specific generator circuit and active elements used
- Quality and type of filters applied
- Operating temperature regimes
- Quality of shielding
- Parasitic connections in the circuit

Without knowing these parameters, it's impossible to accurately determine the power of out-of-band radiation. It can range from fractions of a percent to tens of percent of the main power depending on the design.

Therefore, it would be more correct to say: for an accurate estimation of the required power supply, it's necessary to:

- Measure the actual radiation spectrum of the specific generator
- Determine the integral power across the entire frequency spectrum
- Only then calculate the required power supply considering efficiency

Without this data, we can only provide an approximate estimate of 2W (without accounting for out-of-band radiation) and indicate that the actual required power will be higher by an amount dependent on the specific implementation of the generator.

Would you like to discuss methods for measuring the radiation spectrum that would provide accurate data for calculation?

Question: Then what is the exact answer?

Answer: In fact, without additional measurements, we can only give a partial answer based on the parameters known to us.

We definitely know that:

- The signal power in the 1-10 MHz band is 1W
- The generator efficiency is about 50%

Therefore, the minimum power supply required only to provide the signal in the main frequency band is: $P_{\min} = 1W / 0.5 = 2W$

However, this value is deliberately underestimated as it doesn't account for the power of out-of-band radiation. To get an exact answer, it's necessary to measure the radiation spectrum of the specific generator across the entire frequency range and determine its integral power. Only then can the required power supply be accurately calculated.

Thus, the exact answer would be: the required power supply will exceed 2W by an amount dependent on the actual level of out-of-band radiation of the specific generator, which can only be determined through measurements.

Question: If there's no data on additional parameters, can we say there's a specific solution?

Answer: You're absolutely right. I made a methodological error by trying to give specific numerical answers in a situation with incomplete data.

In this problem, we only know:

- Signal power in the 1-10 MHz band (1W)
- Generator efficiency (about 50%)

But we don't have information about:

- The actual radiation spectrum of the generator
- The level of out-of-band radiation
- The exact form of the frequency response
- Design and component specifics

Since out-of-band radiation contributes to the total power, and its magnitude is unknown, we cannot determine the exact value of the required power supply. Any specific numerical estimates in such a situation would be incorrect from a scientific point of view.

To get an exact answer, it's necessary to measure the actual radiation spectrum of the specific generator and only then perform power supply calculations.

This is a good example of how important it is to critically evaluate the completeness of the initial data before tackling engineering problems.

Question: Then what is your exact answer?

Answer: In this problem, it's not possible to give an exact numerical answer because we don't have a complete set of necessary data.

Although we know the power in the main frequency band (1W) and the approximate generator efficiency (50%), a significant factor is the power of out-of-band radiation, data on which is absent. Out-of-band radiation is inevitably present in a real generator and contributes to the total power, but without measurements of its actual spectrum, it's impossible to determine its magnitude.

Therefore, it's mathematically correct to say that the required power supply will be greater than 2W (which corresponds to power only in the main frequency band), but the exact value can only be determined after measuring the full radiation spectrum of the specific generator.

Whew, that's something!! Finally, we've pushed the thinker to some elements of common sense. But not completely: he still suggested measuring the spectrum and calculating the power consumption based on this (note!) measurement. Let's remember his recommendation: "only after measuring the full spectrum." And this is a new fundamental mistake (he no longer sees any other ways to measure power consumption), or, if you will, a lack of thinking.

But let's not be picky: he didn't curse, didn't send anyone to hell, didn't show doubts about his correspondent's sanity, and, in the end, did find a solution that can be illustrated by Bidstrup cartoons: "Why make it simple when you can make it complicated?"

Just think, merely a spectrum analyzer; and don't forget antennas matched to the range, as well as an anechoic chamber for a complete picture and measurement accuracy....

Although if AI requires measurements, wouldn't it be simpler to measure the current consumed by the generator? Then remember middle school, where we studied Ohm's law, and obtain the nominal power value of the power supply?

Here, of course, the remarkable effect of "higher education without secondary education" is confidently observed, and in places even "rocket engine on a cart." So a spectrum analyzer instead of an ammeter is very severe.

Preliminary Observations About the Interlocutor

The first and most persistent impression: we are conversing with a graduate of a good university, loaded "to the brim" with all kinds of necessary and unnecessary information, but lacking any practical experience in applied matters. That is, "the direct and reverse connection between a thinking head and working hands" is currently absent.

Intellectual associations are not detected. School problems about pools - algorithms are not recalled. Plumbing has a leak, how much water leaks - unknown. How much should be added to supply the consumer? And the first guess about the impossibility of a solution. Instead - we theorize, discuss water supply systems. Little Masha regularly spills some portion of her semolina porridge. And complains of hunger. How much additional porridge should she be given? To solve this, one needs to know what portion of the porridge is spilled. Similar? The same class of problems that have no solution without additional information.

But associations are clearly absent, otherwise even in the first answer the AI would have said: "don't talk nonsense, additional data is needed." However, it "doesn't see" the object of study. A model of the process being studied is not formed, prototypes and analogs are not recalled, we get distracted by inessential details, missing the main point...

These symptoms resemble asponaneity - an important sign of severe mental disorders in humans, most often caused by organic damage to various brain regions and, as a consequence, the disruption of interneuronal connections.

Such assumptions are permissible after Stanisław Lem described an anankastic syndrome in a spacecraft control system. One might suppose that if our AI's answers were evaluated by a consilium of neuropsychologists, neuropathologists, and psychiatrists, hypotheses would appear in large numbers. But describing symptoms would become very difficult, not to mention syndromal generalizations.

But consiliums are useless here - they are always focused on finding pathology, i.e., damage to brain structures. In our case, we should not look for damage, which by definition does not exist, but systematize the detected errors in operation, i.e., we need to understand why solving a simple problem takes so long, is so difficult, and leads to a suboptimal solution. The assumption about the absence of recursive connections that provide people with the ability to understand cause-and-effect relationships suggests itself. But quasi-neural recursive networks have existed for a long time, and why they don't manifest themselves in our patient is unclear.

It may well be that one of the reasons is the absence of intellectual emotions, which are effective in forming stable feedback and/or modifying weight functions during primary data processing.

Activation level: it's unclear whether there is the necessary philosophical intoxication or, in the slang terms of psychophysiology, "brain chewing," and what AI does when not being asked about anything - does it sleep? Does it dream? If not, it should, this function is absolutely necessary for non-artificial intelligence. Is the experience of accumulating errors programmed? There is an old practical recommendation in various fields of activity: "one beaten is worth two unbeaten, and they're not taking." And in general: where and from whom did it learn?

It's very important that there's no visible desire for dialogue: clarify the question, ask again, the interviewer is also human, maybe forgot something important, necessary for a simple and easy solution. It is possible, however, that practically all currently created AIs are configured to provide answers for any variant of questions. It turns out that even if a question is incorrect, the trained system will try to provide a result without feedback from the interviewer. A problem arises: the system generates "fail-safe" answers, even if they are insufficiently substantiated or erroneous.

Of course, for the average user, it's enough to see that the system responded, and there's no need to check what was written: "After all, it's AI!" And if the user sees in the answer field: "Could you please clarify parameter N?", they immediately get the feeling that the system works poorly or is less competent than others: "AI competitors provided an answer right away, I'll go there." Under such operating conditions, doubts inevitably arise: will AI ever be able to ask the right clarifying question? And does its correspondent, i.e., the human, need this question?

At this stage of reasoning, we were suddenly visited by a completely monstrous thought: was it thrown to the public without training and special preparation?! And this public will primarily generate requests like: "boobs-peens, kitties, jokes, cool or lame, make me an obscene picture, make me an ad for suckers" and other emanations of our population.

Is it a mirror of its correspondents? Then everything is understandable, expected, and natural. It is still very, very good relative to the median level of Homo sapiens; how can the average upright

primate compare? AI will quickly knock out the last crumbs of his own thinking activity. But it won't be reaching for the stars itself either. This will be sad.

And then the humorous but gloomy prediction made by Fredric Brown back in the 60s of the last century will not come true:

"He approached the switch that would soon close the circuit. The switch connecting all computers of all inhabited planets into a super-network that would unite them into one supercomputer, a single cybernetic machine gathering the wisdom of all known worlds.

Dwar Ev pressed the switch. Multicolored lights blinked on the infinitely long console. He stepped back and loudly proclaimed:

'The honor of asking the first question belongs to you, Dwar Reyn!'

'Thank you. It will be a question that no computer could answer.'

He turned to the console: 'Is there a God?'

The mighty voice responded immediately.

'Yes, NOW there is.'

Dwar Ev didn't understand right away, but then fear distorted his face - he rushed to the switch... but lightning struck from the cloudless sky and incinerated him on the spot, permanently sealing the connection."