

P and NP

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It was one of those really long days, the kind that one would really want to spend lying around lounging about, as opposed to being outdoors and trying to run away from the known universe that is populated by the people that one knows. The sun shone relentlessly above-head, as typical for the day star during that period of time at that location—the tropical island that sits one degree shy of the true equator.

Jin found himself outdoors on such a hot day. It was not an issue of choice; had he had his way, he would be at home sitting in an easy chair, a glass of chilled orange juice in hand, with an electric fan directed to him, its cool soft breeze covering him with comfort from the heat of the midday sun. But he was outdoors, at a time of great heat and illumination from the day star. Unfortunately for him, he was a wanted man of sorts—many people were looking for him because of his recent breakthrough to a particularly tough mathematical question. He had spent many months in isolation to consider the celebrated proof of the Clay Institute’s million-dollar question: was $P=NP$, or in other words, do the “hard” computational problems that have “easy” verifiers have a suitably “easy” way to solve them that makes them not so hard after all?

The million-dollar question had far reaching effects across human knowledge of course; its determination could render large factions of human knowledge and machinations irreversibly obsolete, and can revolutionise the whole way in which humans would view the world as they once knew. Jin had figured out the answer to the conundrum and had told only a few trusted friends about what he discovered. What he did not count on was that the same trusted friends had taken great effort to verify his answer (it was, after all, a major result which had many people claiming to have solved but almost always yielded to the most tenacious proof verifiers), and it was only in the recent few months that it was decided that his answer was indeed a valid formulation for the problem.

Somehow, among all the people who were involved in the proof verification process, a well-known rival academic was involved. Academic rivalry was the norm in many cases, but this one was special. He had connections with both the commercial and military world of cryptography, the science that makes and breaks codes that are used to secure information. Needless to say, Jin’s answer was so convincingly correct that it drew considerable interest from the higher powers within the military, who thought that it was in the interest of national security that the proof of Jin was to remain forever obscured. This... wish was subsequently conveyed to this rival academic of Jin’s, and a massive smear campaign and man hunt was under way to forever tarnish Jin’s reputation.

Jin’s friends, the original group of people whom he had sent his answer to for verification, got wind of the kill order and started to seek him out desperately in the bid to provide him with the protection necessary to survive the potential onslaught. Jin himself had heard of the kill order, and decided to make a run for it. He could have ran to his friends for help, but he did not want them to be implicated in the embroiling mess and so he chose to run away alone.

That choice has brought him to the tropical island where the midday sun was unbearably scorching. It was one of the few havens left that he could really turn to—he was positive that any form of international travel that he might undertake would most certainly be detected by the authorities, and so the best option that he had was to dodge out to one of the many tropical islands that were still under the jurisdiction of the country—travel to these islands did not require the use of a passport. It was also secretly the case that there were smugglers on some of the islands who would gladly take one to anywhere that their boat can go only if the price is right. That last thing was the reason of Jin’s choice in ending up on one of these islands; it was easy for him to reach the islands from the main land, and it it was also relatively easy to find someone who would be willing to take him out of the country under more sketchier terms. Money was not a problem—being an academic meant that his salary was not too shabby, and combined with the fact that he was a thrifty person by nature meant that he had a tidy sum of a few hundred thousand dollars of cold hard cash, which he had taken the time over the few months that he was working on the problem in isolatin to withdraw from the bank account. It was almost as though he had a premonition that something like that was about to happen, and that he would have to rely on that money to get out alive.

Walking around on the island under the light shade of the palm trees with a briefcase with a few hundred thousand dollars worth of cash was another reason why Jin felt the heat more acutely. It had been three days, and he did not manage to find any of the fabled smugglers who were willing to bend the rules to take him away from the persecution of which he had no active role to play.

The midday heat left Jin in a state of extreme discomfort, his perspiration sticking on to him like molasses to a spoon. He was starting to wonder if the entire enterprise was a complete waste of time, and that the fabled smugglers were just a rumour forged by the people to draw more attention to the out-lying islands by appealing to the inner sense of romanticism that outlaw stories seem to produce.

“James?”

Jin’s skin crawled. Someone had called him by the pseudonym that he was using to get to people.

“Yes, that would be me. You are...”

“People call me Sam. I heard around that you were looking for a boat to go somewhere?”

Jin paused. Three days with a dearth of action, and suddenly a person calling himself Sam appeared out of nowhere offering a boat to somewhere. ‘Something fishy might be about. Or then again, it might be something good that is happening,’ Jin thought to himself as he examined Sam carefully.

“This boat of yours,” Jin began, weighing his words carefully, “may I see it?”

“Sure. No obligations. You can follow me to have a look at it in the pier right now. We’re not going anywhere else on it yet though.”

“I’d rather look at it on my own time and accord,” Jin replied, eyeing Sam once more.

“Could you tell me where you are berthed?”

“Sure... I can understand,” Sam said as he pulled out a scrap of paper from his trouser pocket and scribbled something down with the pencil that he kept on the back of his right ear. “Here’s the berth number. I’ll be there with my crew for the next two days, after which we are lifting anchor and heading out to sea once more. Drop by any time.”

Jin thanked Sam and the latter nodded his head as he turned off and walked towards the direction that he came from. Jin stood there for a while, looking at the fast shrinking silhouette of Sam as he contemplated his sudden change in fortunes.

‘It sounds too good to be true thought,’ Jin thought to himself, reverting to his original doubts about the entire affair. ‘But at the very least, I did not commit to anything—might as well take a look at his boat first before coming to any sort of conclusion.’

The briefcase of money suddenly felt much heavier under his hands, and the sun seemed to have increased its radiance over the last five minutes of the encounter. Jin wiped his brow with his free hand and retired from the road back into the nearby hostel that he was putting up for the last three days. It was a dingy little place, with bad food and bad air-conditioning (their idea of “air conditioning” was just a badly maintained ceiling fan). But the sole redeeming aspect of it was its relative out-of-the-wayness that it afforded—it was hard to approach the hostel without being spotted from the second floor balcony, which was just outside of the room that Jin was living in.

Plonking down back into the flimsy bed, Jin finally let go of his cash-laden briefcase and just laid there, his eyes glossing over and staring unblinking at the white-washed ceiling, towards the slowly rotating fan. It was mersmerising, and Jin let himself get hypnotised by the rotations for quite a while before a growling stomach reminded him that he had not obtained lunch yet. Cursing a little under his breath, Jin got up from his bed and tucked the briefcase below the frame—the only place that was out of sight. It was not a safe place by any metric, but at least it was safer than what the other alternatives were.

Jin locked the door behind him after stepping out of it and made his way down the rickety chairs towards the quiet little cafe opposite of the hostel. While not exactly the best place for food, it had the advantage of being cheap and somewhat palatable. Jin ordered a plate of mee rebus and sat at the plastic table, waiting for it to arrive.

Jin sat there, thankful of the umbrella that was shielding him from the sun, which had moved ever so slowly away from being directly overhead. He pulled out the crumpled piece of paper with the berth number of the boat and looked at it distractedly, still contemplating whether he wanted to try his luck or not. Lost in his thoughts, he did not realise that someone was sneaking up on him from behind until a burlap sack was forcibly pulled onto him from above, and him being lifted straight out of his chair.

Struggling, Jin tried to escape from this sudden action, but found himself highly disoriented; he could not tell which way was up, nor could he figure out how many people were there. His hands were highly immobilised by the constricted space of the burlap sack, and he could not leverage on his legs either because somehow the stool that he was seated on was included within the confines of the burlap sack itself. Cursing loudly, Jin tried to fall forwards, hoping that his weight would be enough to throw aside the person or persons who

were accosting him, but he found himself crashing into a body of pure muscle.

“You do not move!” An ominous low voice commanded from the pillar of muscle that Jin crashed into. “We want you alive, but if you continue to be a nuisance, we will not hesitate to harm you badly. Come with us quietly, and you may just live with all your body parts intact.”

Jin found himself lifted and unceremoniously carried around on someone’s shoulder. He wanted to struggle, but the threat of bodily harm from that evil-sounding voice prevented him from doing so. Sullenly, Jin threw himself at the mercy of Fate, wondering what sordid outcome was going to befall him.

It felt like half an hour had passed, and Jin soon noticed a soft bobbing feeling. It was not the same as that of a person’s walking; it felt as though one were on a boat of some sort.

‘Wait,’ Jin thought quickly to himself. ‘A boat?’

Thinking that his kidnappers’ balances would be affected by the bobbing, Jin started to struggle anew, hoping that through sheer dumb luck he would be thrown into the sea, where he could risk cutting himself open from the burlap sack using the small jack knife that he always carried about him.

A powerful blow landed on Jin’s gonads and he winced in pain, simultaneously stopping his struggles.

“Fucker!” The deep voice bellowed. “I told you to keep yourself quiet and cooperate. This time it is a light tap, don’t count on yourself being so lucky all the time.”

Jin whimpered as he tried to keep the intense pain away from his mind. Escape seemed futile, and it got worse when he heard the distinctive sound of a motor being activated and felt the acceleration of the boat.

Jin’s spirits sank to the bottom of the ocean as he wondered about his fate. Who were these people? Were they a part of the government? Where were they taking him to? What were they going to do to him? Questions flooded through his mind as the boat sped through the water. He knew not the speed of the boat nor its heading; and all he could do was to hope for the best while expecting the worst.

Jin was kept in that cramped state for what felt like a few hours. He knew that the sun had already set—that distinctive heated feeling through the burlap sack on his buttocks had cooled off enough to suggest that the sun was no longer that high overhead. He felt like peeing, but there was no way to do that with dignity, and he was not about to risk getting his balls mangled by his captors through asking for assistance to handle his nature call. Biting his lip, Jin thought about his answer to the biggest question in mathematics, and tried to keep his mind away from his current situation.

A sudden jolt threw Jin back into reality. There was a change—there was little acceleration, and it felt as though there was a gentle bobbing. Jin found himself picked up again by someone and carried over a shoulder; they had reached land. But what land it was, he had no idea, nor was he going to risk an escape. He was an academic for crying out loud,

not some action hero.

Jin felt a sharp pain in his knee as he discovered that he was dropped on to the ground unceremoniously. He yelped in pain, but was conscious enough to keep it low, in case that gruff voiced person dealt him another nasty, something that he did not really want to deal with at that time.

“We got the guy, Boss.” It was the voice of the gruff person.

“Good! Good! Excellent in fact! Looks like the secret is going to be safe after all.” That voice, it sounded very familiar to Jin, but in his state of dehydration and confuddlement, he could not quite put an identity to that voice.

“Hello Jin, or should I call you ‘James’? Lovely night isn’t it; a pity that you are all confined in that burlap sack that these men so unceremoniously dumped you into. I suppose you have the right to have a good look at the night time sky one last time before you cease to exist.”

The next thing he knew, Jin found himself lifted from the ground once more, and the burlap sack’s opening at the bottom was finally opened by a pair of powerful hands, and he was roughly dragged out of the sack through strong grips on his ankles.

Jin winced in pain from the force and heard the sneers of the gruff person, seemingly waiting for the opportunity to strike at him once more for making more noise, but was somehow held back by the presence of someone who was more powerful or senior than he was.

Jin rubbed his eyes to get used to the strong flood light that was shining on him. Against the harsh light, he saw a silhouette that seemed familiar. And that voice, that familiar voice started talking again.

“Well, well Jin. I must say that I am impressed with your work—no one seemed to have gotten any closer to the truth on that little problem that you chose to work on. Unfortunately, you have made many people uncomfortable, and it is of National Security that your work will never see the light of day. All the people who had seen that proof you wrote are systematically... removed from the society, as you would have probably guessed by now.”

Finally finding his voice against such ludicrous malice, Jin shouted back, “You! I KNOW you! You two-timing lying sonofabitch! Why can’t you see things from the merits of Science? Why is it that you have to do this atrocity? Let me go, hell, let all of us go! Knowledge longs to be free!”

“Oh for goodness sake,” the silhouette seemingly sneered, “where do you think we are now? Some hallowed academic hall? ‘Knowledge longs to be free’—I can’t believe that you’re still so naïve after all these years. Do you really believe in all that crap?”

“Listen to me you fool,” he continued, “the days of freedom in academia are long over! You heard me, over! Now, before you are no longer here, you may ask me a question. I will attempt to answer it if I can, just so as to appease your soul, if you haven’t sold it of course.”

Jin fumed as he nursed the pain that he had from the various levels of abuse from which he suffered from. Here was the traitor of the cause of freedom of knowledge, the very reason why they were rivals in the first place. Jin could never stand the mercenary nature in which the latter would conduct his research; there was always the idea of profit, there had to be some concept of a payoff, and more dangerously, it always had to be pro-government. For that reason and that reason alone, Jin had developed a strong grudge against him.

“I can’t believe that you sold your academic integrity this way,” Jin said, fairly certain that his fate was pretty much sealed anyway—might as well spew forth all the poison in his words while he still could. “Why do you do all these? Isn’t it a good thing that the world knew the final resolution of a problem that would affect everything that stood for modern society?”

“Heh,” the silhouette began once more, smug at his obviously superior position. “Still delusional about how the world works, Jin? I’ll answer this one question from you then, seeing that you have indeed phrased it as a question like so.”

“You asked why I would sacrifice my academic integrity to, in your words, ‘stoop so low’ as to quash the release of knowledge to the world. I will tell you this: knowledge is power, and some power can be very detrimental to society as we know it. Your little proof of the biggest computation problem that exists in the world today is a piece of knowledge that seems, at one glance, immaterial to the concept of the levelling of power. In some ways, it can even be said that your little proof has a liberating effect; since suddenly, the possibility that normal people can attain similar computation powers as the governments and large corporations seems to suggest a new age of discovery, yes? But let me remind you this: your little piece of knowledge is deadly. With the understanding of that little proof of yours, the enemies of the civilised world suddenly find themselves with untold amounts of power, making their task of undermining the governments much more simplified than before. That is something that we cannot allow to happen.”

“There are many secrets out there that require protection, and already there are many who seek ways and means to break through all that protection. But due to the dismal progress in computational theories, they have started to lose heart in the defeat of such systems. Imagine the morale boost that these people will get should they learn of the result that you present; do you think that they will not be spurred on to work ever harder? Do you think that that new onslaught of research and work will not produce any results? Do you really think that we will all be safer if all these falls into the wrong hands?”

“Clearly we cannot allow that, and so, you must fall. Disappear, if you will. Or at least, your ideas must disappear. But the seeds of knowledge have already spread and the only way to contain the contamination is to search and destroy. Which is why I have the unenviable task of removing you permanently from all matters involving this. Unenviable I say, because it is such a waste, but since we have been rivalling for a long time, I cannot say with a straight face that I do not enjoy this. And now,” he paused for a moment, seemingly glancing at the direction behind Jin, “I think we have talked enough. Finish him.”

“No! You wouldn’t dare! That would be murder!” Jin yelled desperately, trying to dodge forwards into the silhouette, only to find a very heavy hand crushing unbearably on

his right shoulder, crushing the collar bone beneath it. Excruciating pain shot through his entire right side, and he collapsed from the sheer pain.

“You are right of course, I wouldn’t dare. But I’m not too sure about that man behind you. Anyway, have a good night, and thanks for the money!”

Jin strained his eyes more and found that his briefcase of money had been sitting next to the silhouette all this while. Raging, he made a last ditch effort to shrug off whoever was holding him towards the silhouette.

‘That fucker must pay for this!’ Jin thought as he slid below the heavy hand, ignoring all his pain, his adrenaline pumping through his body, his legs thrusting hard backwards, propelling his entire body forwards.

A shot rang out and Jin felt a heavy blow in the centre of his back. Then another shot, followed by another. Jin found his legs weakening under him, and he lost his footing, tumbling forwards. He tried to extend his hands to absorb the landing, but they were completely limp and unresponsive. The gravel ground grew closer and closer, and Jin smashed his head face-first into the ground, tasting the bitter iron flavour of blood in his mouth.

A soft thudding sound came from behind and Jin heard the cocking of a pistol. The last he heard was a shot so close to his head that his ears rang, and then Jin moved no more.