

My Perspective of Time

As I sat on the bench with my head down, I thought about how horrible I had been playing in the game so far. Why bother I thought and considered leaving. Then I imagined I was old and grey and in that moment, I realized I'd give anything to go back in time. I yearned to be my young self, back in the hockey rink with the guys, looking forward to beers in the dressing room after. Whether I scored or not didn't matter, I was given another chance to just enjoy the game. I skated with a happy energy as the puck was passed around. I needed to place myself way ahead in the future in order to positively affect my present situation. And at that moment, the circle of time was drawn; when I am an old man, there's a chance I'll remember this moment bringing a smile to my wrinkled face while I pat myself on the back for not leaving the game in frustration.

Our personal experience of time is relative and fascinating in ways.

This includes our experience of the length of time. Consider an intense time, perhaps a vacation. Consider a one week experience filled with memories and packed with special moments and people you meet for the first time resulting in intense emotions and tidbits of wisdom. A time that stands out compared to your normal life. At the end, do you not experience this paradox: that when you think back to the start it feels so long ago and yet it also feels like the time went by very quickly?

Why is that? To answer the question, I am going to use a bit of math. In our normal day to day and month to month life, our brain becomes used to a number of 'events', e in a certain length of time t . These 'events' can take on different forms. For example if you were to think of events in your daily life, it might be something unique that happened on your commute to work such as seeing a horrible accident. Or picking up your daughter from school but this time her friend shows up. Perhaps in that week's grocery shopping you see the blueberries are from Peru which catches your eye and reminds you of your recent trip there. The ratio of the two, e / t is our personal events/time ratio. It is different for everyone and can also change over time during one's life. So when e is suddenly increased, the ratio becomes $(e + n) / t$ where n is the increase in 'events'.

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Let's say we set e to 10 and t to 7 with the idea of 10 events over a length of time say 7 days. It's worth noting that our unconscious interpretation of an 'event' is relative also, that what might be an 'event' for one person may not be such for another experiencing the same thing. How we unconsciously define an event is relative and can be an intense moment or experience. In this example, we have grown used to in our normal daily lives with the parameters described, an events/time ratio of $10/7$ or 1.43.

Now what if we have a week, which anyone can probably relate to, where we experience much more 'events' than usual. The definition of an event is subjective but let's say e suddenly climbed to 25 in that week. For example, our family came to town over the holidays to spend a week with us. Or we made a one-week trip to hike to Machu Picchu and met amazing people along the way. Our events/time ratio has now increased to $25/7$ or 3.57.

When our events/time ratio is higher than what we have become accustomed to, our wonderful brain expands time to match what we are used to. In other words, our brain adjusts the time that has normally gone by for 25 events. In this case our one week has expanded to 17.5 days. When someone has a very busy day, they might tell someone that they had a long day. But the length of the day has not changed. It's their subconscious mind's interpretation of the day. Their event/time ratio increased for that day. An increase in this ratio simulates and increases in time in the mind.

Consider when e is smaller than usual. Perhaps a week where not much happened compared to our usual week. In this case for example let's give e a value of 3. Our ratio, $3/7$ is now 0.43. Now we are experiencing something that is below the ratio we are used to. So again, our brain naturally adjusts. In this case, our week has shrunk to 2.1 days. Isn't it true that when you don't really do much, that by end of the week, it feels much shorter than usual? Now again to show how relative this is, if someone else is used to e as 3 during a week, their week does not feel shorter than they are used to.

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In 1997, I spent 3 months in the northern town of Tsfat, Israel, learning with others from various parts of North America. We all lived together studying and doing epic hikes through the land together. By the end of the program, it felt as if the start of the program was so long ago, definitely longer than 3 months. This was another case where my events/time ratio was a lot higher than normal for me. I hope that I have explained this phenomenon of how the start feels farther back than usual; our brain expands time to match what we are used to. I also felt like I had known the others in the program for many years.

I used to run on my own in the forest north of the campus. For me, running solo was a form of meditation where I would clear the mind of any stresses. On one such time, I reflected on all that I had experienced so far. A sensation arose that though the program started one month before, it felt as if it had gone by very quickly, that we had just met the day before. This leads to a dichotomy; time has gone by quickly, but the start feels so long ago.

How can this be explained? That on the one hand at that point, it felt so long ago when the program began but also that time had gone by so quickly. In a way there is also a reverse effect of the experience. Let's go back to considering the example of e (events) of 10 happening over t (time) of 7 days giving the ratio of 1.43. That is what I was used to. Let's also say again that e becomes 25 now over the same timespan t . As our brain unconsciously adjusts t to match our usual ratio of what we are used to, our sense of time is extended as discussed earlier.

But our brain has to address the fact that $e = 25$ in reality occurred in $t = 7$. Our brain senses the 25 'events' packed into a timespan when we are accustomed to 10 events. Fitting the events in less space than what is normal between them creates a sense that they went by very quickly. The space between events has shrunk. Our wonderfully talented brain is able to juggle both phenomena at the same time.

In my own brain, a tumour was discovered in 2004. When I was told that it was a fatal cancer, it felt that the previous moment, before I was given the horrible news, suddenly felt very long ago. This is because there is another variable at play; the *intensity* of the moment. When

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the intensity (i) of an event increases, it is added to the variable e . We need to adjust our equation to $(e + i) / t$. In that moment, my brain adjusted t to match my events/time ratio, now recognized as (events + intensity) / time. The effect of the news of the tumour resulted in a new event/time ratio.

Our interpretation of events is of course measured by our mind. The event and intensity of that moment, hearing the diagnosis resulted in the numerator increasing to say 1000. And so with my normal time/events ratio of 1.43, the amount of time was unconsciously adjusted to around 700 days. My life changed drastically, in that moment, as it might have after approximately 2 years. Perhaps that is why we see some people who have gone through a very traumatic event, actually look older.

The word of the unfortunate news spread to friends and family which I think played a factor in helping me be strong in the face of this adversity. One of my friends who gave support was someone I dated a few years back. We had a very intense relationship but over a very short amount of time. In fact, over 6 months, we only met 13 times. If I may, I can say e was 13 and t was 6. It's crazy to think of that time as a math equation, but bear with me. In this case, each time we met was so intense, i in the ratio increased significantly. As described before to match the ratio that I was used to, my sense of time had to expand. And sure enough, though we only met 13 times in 6 months, it felt as if we had been dating for many years.

Of course, as days pass in our lives, we experience many events, big and small, short and long, sometimes very intense, sometimes not. Life can be overwhelming and sometimes it's good to stop and give yourself what some have described as non-time. This is disconnected quiet time and this time of emptiness can help clear the mind. One way to do this is through meditation.

The act of meditation can involve limiting movement and thoughts to deep breathing and not letting the mind wander. Another way to look at is to decrease the events and intensity in your mind. If we meditate, theoretically, if we are a master and can completely clear our thoughts entirely (which is very hard to do!) and remain motionless, e approaches zero. In this

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case, no matter what the value of t is, our event/time ratio also approaches 0. During quality meditation where e decreases, t also has to decrease. Some say that during intense meditation, time appears to cease to exist. Perhaps, from our personal perspective, time really has stopped and some say that meditation can slow down the aging process. Perhaps this is one of the reasons. Of course, it is impossible to completely stop time. The denominator can never be zero which goes for the events/time ratio. The only instance where $t=0$ is when a person passes away. At this point the person's events/time ratio is undefined.

When I go on a nice hike, it feels like meditation. When I'm on the ice, in a way, it also feels like meditation as my thoughts do not wander and my mind is clear. As I left the bench with a beaming smile, I glanced at the clock and saw that time was running out. But it didn't matter; the sounds of skates on the ice, guys yelling to pass the puck and being slammed into the boards, and the cold smell of the rink—it was magic. Then the puck landed on my stick and this time I sent it flying into the other team's net. As the guys surrounded me patting my head, I looked up and winked to my older self in the future. Time is very fluid in so many ways and the key is to enjoy every second of it.

Note: Mathematical equations that were used are available in more detail along with visualizations of the various scenarios described which helps to understand the phenomenon.