



Time distortion in static apnea

Jan Bareš

Instructor course, We freedive, Phuket, Thailand
17.5.2015

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Introduction

Subjective perception of time during static apnea and the time interval that we measure on stop-watch are two different phenomena. This paper aims on subjective perception. The difference between objective number and subjectively estimated length of breath hold is called time distortion. Time distortion can be beneficial for freedivers during static apnea. Following text gives basic frame on topic of time distortion and it's applications in self-coaching and buddying.

Time perception

Time itself is illusion of the mind. We are used to think about the time as about the reality of past, presence and future states. In fact both past and future are mind-created entities. The only real time is the present moment. Past is projection of memories and future is anticipation and fantasy. None of that exists indeed.

To define the time we need change of state of any kind. Therefore time takes place only in the space. In motionless and changeless conditions is time not only meaningless but virtually impossible.

“In 1917, Albert Einstein completed work on the General Theory of Relativity, one of the rules of which states that time is fundamentally bound to matter and gravity, and that without matter there would be no time. Oddly, this concept was presaged almost 1,300 years before that when Bishop Augustine of Hippo (later St. Augustine) put forth the idea that when God created the Heavens and the Earth, he created time itself as well.” (Rosenfield, 2015)

Every particle of the universe is in certain time on one certain place. The reality is ever since changing and the change creates the idea of time. Present moment is way too short to be captured by mind. What mind captures easier is present state.

In every day life we can distinct between two kinds of time. Experiential time and world time.

Subjective sense of time and objective synchronized common sense of a clock time. In ancient Greek there are two words for time accordingly. Chronos is the time we share with other humans, quantitative time measured by watches, counted in seconds or hours. Kairos refers to inner time that is qualitative and describes presence itself, the flow of experience. Interestingly, the word kairos in modern Greek refers also to weather.

In our everyday life we spend most of the time in the flow of experience and the objective time on watches is secondary. Time to eat, time to rest, time to talk, time to listen, time to play, none of them is defined by seconds or hours. The flow of experience provides the right time to do any of those.

When we are asked to estimate the length of time interval, our estimation is based on our sense of flow at that particular moment. When we have a good time and enjoy the moment, time goes seemingly faster than when we are not enjoying it at all. Emotional component of experiential flow is therefore essential.

Time distortion

Since our life is regulated by clocks, we all developed certain idea of duration of one second. The idea is more or less accurate.

These "experiential seconds" might be considered to be true units, though inaccurate ones, of experiential time. The same may be said of "experiential minutes" and small multiples thereof. Unfortunately, as will be seen below, the word "duration" is used in physics in an entirely different sense. In physics it means the clock reading of a time interval, that is, the advance of clock-hands, measured in spatial units, during an interval. (Cooper, L.F.; Erickson M.H., 2004)

The discrepancy between clock time and experiential time within can be of two kinds.

In static apnea is beneficial, when subjective time runs slower than the clock time. In such state of flow one experiential minute takes more than a minute in world time. The scale of distortion depends on the quality of experienced reality, on the state of mind.

State of trance amplifies time distortion, even if the depth of trance is not related to scale of distortion. In other words, even light trance can cause massive time distortion. Trance is state of mind of daily occurrence, including situations like waiting on a bus stop, driving a car or listening to music. Trance can be reached by various means: relaxation, meditation, imagination, good coaching, hypnosis... Etc.

“... there may be a very marked difference in the experiential duration of two time intervals during each of which a clock hand advanced the same distance. The first one may seem to the subject to last one minute and the second one 30 minutes, depending upon the suggestions given. Yet when compared according to the method of the physicists, the intervals are pronounced equal. Thus our clocks do not truly measure, or compare, quantities of experiential time.” (Copper, L.F.; Erickson M.H., 2004)

For basic understanding of hypnosis and suggestions in freediving see article Mathias Zaugg - Hypnosis and Deep Relaxation in Static Apnea.

There are two ways to approach the mind of freediver when we think about using time distortion during STA. One way is self-regulating mind activity of freediver. The other one is coaching of a buddy. Both of them are discussed below.

Inducing time distortion within one's own mind

Basic tool to self-induce time distortion is to reach state of relaxation and slow down the mind.

The less thoughts are there, the stronger time distortion is. In silent flow, time passes by without noticing. The desired state is relaxed body with low heartbeat and peaceful mind. There are countless ways for every individual how to reach such a state.

With every repetition of our apnea practice we can learn something new. Repetition brings automatization of learned skills. Step by step we create network of associations in our mind and body. “Neurons that fire together, wire together.” (Doidge, 2007) When state of apnea is repeatedly associated with relaxation, the connection between them gets stronger on both psychological and neurological level.

When we learn to reach certain state of being, for example static apnea, we learn to reach this state in all of its complexity. The complex state can be seen as sum of its components. Once the state is learned, it can be triggered by stimulating one or more of it's components. This is the case of classical conditioning. In his famous experiment, I.P. Pavlov (1927) was able to trigger salivation of experimental dogs by ringing a bell. Normally the sound of the bell and salivation are unrelated. Though, if the sound of the bell is associated with anticipation of food, salivation and even hunger is triggered.

In similar fashion, freediver training relaxed state and time distortion during static apnea can condition body to develop state of relaxation and trigger time distortion as soon, as he holds his breath or puts his face in a water.

To reach time distortion it is essential to avoid looking at clock, as it synchronizes the inner time with the word time. Good ways to reach time

distortion is relaxation of body, emptying mind, autosuggestions and work with imagination.

Time distortion via relaxation and imagination

Following text presents a set of exercises that help to induce time distortion. Reader is encouraged to experiment, use what works and create own individual ways of changing the perception of inner time.

Stretching

In relaxed state of body, time seems to run faster. Time passes by easily. When we are tensed, seconds feel subjectively longer. Therefore body relaxation is essential. Soft muscles consume less oxygen too. Softening of muscles starts with stretching. When you want to prepare for inducing time distortion, do proper stretching and focus on technique of the stretches. Take care of your actual body needs, take it slow and play with breathing into stretches. Add stretches on inhale and on exhale. Softened intercostal muscles and stretched diaphragm make it more comfortable to hold big amount of air. Comfortable means relaxed. Foot auto-massage after stretching can amplify the feeling of comfort. Whole process of stretching gives us opportunity to start working with mind as well.

Focus on sensation and present moment

Relaxation of mind is complementary to body stretching. Mind shall be focused on present moment as much as possible during the stretches.

To stabilize the mind focus on breathing and sensations during the stretching. When mind slows down, focus on sensual perception.

Focus on sight and amplify the sensation by your attention to details, colors, shadows, shapes... Etc. After you feel you reached the maximal sensation start to work similarly with hearing, pay attention to all the sounds you around you ... when you see and hear more ... in your own tempo add smell and taste and tactile sensations.

When you change the stretch, mind shifts to details of stretching and you consciously optimise your position. When the position is right, focus back on sensation and breath.

Relaxation

After stretching, when muscles are relaxed and mind is focused, do set of mind exercises to stretch you mind. Mind stretching is widely underestimated.

Following paragraph gives few basic ideas how to proceed "mind stretches". Find comfortable position and just breathe. Focus on sensual perception and vilify it.

Close your eyes and find the center of your body. Feel it.

Imagination

The following set of exercises provides basic frame work for inducing time distortion.

Repetition, modification and search for individual ways bring success.

Size distortion

Imagine yourself at the place where you are.

Imagine a magic, that is making you smaller and smaller until you are very small... and everything around you gets large.

“Zoom out” and create the idea of Earth... and you, flying on the Earth through infinite space.

...Feel your body again...

Focus on your face and then on your feet.

Imagine how far it would be for very small ant to walk from your head to your feet.

Imagine all the journey the journey from your head to your toes.

Imagine your body as a really big colony of cells, living island.

Imagine the blood going through tunnels of your veins.

“Subjects observing differently scaled environments undergo systematic shifts in the experience of time. The experience of temporal duration is compressed relative to the clock in the same proportion as scale-model environments being observed are compressed relative to the full-sized environment. This research suggests that spatial scale may be a principal mediator in the experience of time.” (DeLong, 1981)

Time distorted worlds

Imagine yourself going through magic door to very special world, where everything looks like slow motion movie. Observe people in this world, imagine details from nature, where everything is twice slower. Play with your imagination and create lot of details. Imagine how you move through this world as an observer.

Imagine that you find in this world another magic door. You go through them and you enter different world. World, where everything goes much faster. You can observe people in fast motion, imagine the sun shooting across the sky, where clouds are forming and disappearing in front of your eyes. Create in your mind many details from nature. Imagine how flowers are opening in the morning and closing when it is time to sleep. Play with your imagination and imagine yourself, moving as an observer in such a world.

Creating anchors

Anchors are built by repetition. Anchoring uses a stimulus; it may be a sound, an image, a touch, smell or a taste to trigger a consistent response. In this case we associate particular stimulus (for example touch on a middle finger) with relaxed and stretched feeling of a body and stretched and relaxed mind. With repetition the connection grows stronger. Anchor can be used to remind or maintain relaxed state during static apnea as well the relaxed state during preparation for a breath hold. Anchoring is based on classical conditioning described earlier and is widely used in neuro-linguistic programming.

Breathe up and breath hold

Do your way of breath up and focus on putting yourself into “slow mode” or “sleep mode”.

It is useful to have certain “mantra” thought for the start of the breath hold. Such a mantra can be “Sleep”, “Shut down” or many others. Mantra in this

case works as a suggestion putting body in sleep mode. If used repeatedly, mantra turns into anchor.

Inducing time distortion as a buddy

Buddy in STA is more than safety and coach. Buddy is a guide on freedivers journey through his internal experience. Key concept for good buddying is rapport. Rapport is psychological connection based on the feeling of understanding and trust.

Preparation

Buddy's taking care of a freediver starts long before performance itself. Topic of time shall be in conversation avoided. If possible, no clock shall be around. The aim is to temporarily detach freediver from the world time. In order to prepare freediver for time distortion, all activities shall be proceed in relaxed and chilled tempo.

In water buddy takes care of freediver in usual fashion to ensure smooth and comfortable breathe-up.

At this stage is possible to provide freediver direct suggestions.
"After you take your final breath, spit out the snorkel, close your eyes and enter your inner world, where you can rest and sleep."

This kind of suggestion is easy to follow, as it consist of three true statements and leading statement in the middle 'enter your inner world'.

Breath hold phases

There are two distinct phases of breath hold. In first phase a freediver more likely prefers to be left alone and does not require coaching. This is the comfortable part of the breath hold. When carbon dioxide in blood reaches certain level, freediver might need a help form outside, coaching. At the end of breath hold can buddy motivate freediver to hold breath longer.

Coaching

"Coaching is directly concerned with the immediate improvement of performance and development of skills by a form of tutoring or instruction."
(Parsloe, 1995) Coaching is "unlocking a person's potential to maximize their own performance. It is helping them to learn rather than teaching them."
(Whitmore 2003)

Following text contains several basic notes on STA coaching that might and might not be obvious.

Nonverbal communication

Buddy shall speak rather slowly and calmly, yet clearly audible. If possible, buddy shall use rather low-pitch intonation of voice. Low voice is relaxing.

Use of touch in STA depends on particular freediver and his buddy. In some cases touch on the shoulder can be reassuring and increase the feeling of safety.

Direct suggestions

Direct suggestions are formulated as orders. Buddy can directly tell freediver what to do. For example to focus on certain sensation, ask him to relax or redirect freedivers attention. Direct formulations shall be always formulated as positive statements. Avoid using "do not..." formulations. Direct suggestions work best when the trust and cooperativeness are high, or when the freediver has a lot of respect for his coach-buddy. The aim is to increase freediver's comfort and confidence. Suggestion is accepted if it does not create resistance. For example widely formulated suggestion to relax given to tensed freediver at the late stage of breath hold can create strong resistance and damage rapport. Therefore suggestion to relax should be given with specification of muscle or body part. Such a suggestion is easier to follow and therefore creates less resistance.

Examples:

"Relax your neck/shoulders."

"Your nails are nicely pink, which means that you still have enough oxygen for your body.□"

"Imagine that you are a tree in a winter time."

"Focus on sensation in your toes."

Indirect suggestions

This form of suggestions is softer and creates less resistance. Instead of telling subject directly what to do, indirect suggestion imply reaction, yet leave the space for choice. The simplest form of indirect suggestion is truism. Truism is obviously true statement valid in the situation. The choice of truism depends on aimed reaction.

For detail understanding of indirect suggestions and their dynamics read *Hypnotic Realities* by Rossi and Erickson (2010).

Examples:

"Your body is weightlessly floating in the water. Your contractions started and that is the sign that body switched into oxygen saving mode. The peripheral vasoconstriction is bringing blood to your vital organs..."

This type of suggestion directs the mind to weightlessness and reframes the sensation of contractions into helping and useful mechanism. This reminder can help to mediate emotional response during contractions.

"You have great opportunity to learn about how your body conserves oxygen now."

This suggestion also reframes uncomfortable sensations of later stage of breath hold. Learning process is emphasized, yet it does not directly tell what to observe. Being in present moment and the value of experience are pointed out as well. That induces inner search for appropriate reaction in freediver.

Distractions

Distractions are used to direct attention of freediver away from his body perception.

Counting tiles at the bottom of the pool, focus on sounds of water in a pool, off topic short funny story, counting colorful sheep, asking freediver to lift this and that finger, simple math, spelling alphabet backwards, □ and many other tasks can distract the mind from body during later part of breath hold. Buddy should switch between different forms of distractions, as they work only for limited time. Personal opinion is to change the distraction every 15 seconds to keep freedivers mind busy.

Count downs

Count downs are beneficial especially at the end of the breath hold. When counting down from 10 to 0 is beneficial to count slowly to reach the best total breath hold time, yet fast enough to keep freediver motivated to hold on to till the end of a count down.

Some individuals like “endless” countdowns, which means that when count down should reach number one, ten is pronounced instead and thus the countdown is restarted.

Summary

Inner psychological sensation of time deviates from constant regularity of world clock time. Whenever inner time goes slower, the clock time goes relatively faster. This state is beneficial for static apnea. There are ways how to use and amplify this natural inner time deviation. This is called working with time distortion. Time distortion can be massive in a state of trance. The depth of a trance is not related to scale of time distortion. To induce trance state and time distortion, freediver is recommended to use stretching, relaxation, mental exercises and anchoring techniques. When buddying, it is important to build up strong rapport, skip the topic of time before STA performance. When coaching freediver during STA, use non verbal communication, suggestions, distractions and count downs to enforce time distortion. When five minutes feel like two, static apnea gets easier. Repeated experience brings conditioning of body and mind and therefore is the base of learning process.

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