

Testing in The Age Of Distraction

The Importance Of
(De)Focus in Testing

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*“All ignorance toboggans into know
and trudges up to ignorance again:
but winter’s not forever
even snow melts;
and if spring should spoil the game,
what then?”*

- E.E. Cummings -

Biography



Zeger Van Hese has a background in Commercial Engineering and Cultural Science. He started his professional career in the motion picture industry but switched to IT in 1999. A year later he got bitten by the software testing bug (pun intended) and has never been cured since.

He has a passion for exploratory testing, testing in agile projects and, above all, continuous learning from different perspectives. Zeger considers himself a lifelong student of the software testing craft. He was a program chair of Eurostar 2012 and co-founder of the Dutch Exploratory Workshop on Testing (DEWT). He muses about testing on his TestSideStory blog and is a regular speaker at national and international conferences. In 2013, Zeger founded his own company, Z-sharp.

The subject of distraction has kept me busy for quite some time now. To be honest, it kept me busy way longer than I anticipated, since I'm easily distracted and quite a big procrastinator. There is a lovely bit of irony in this all: in preparing and researching this paper and presentation about distraction, I was permanently distracted and ended up procrastinating like there's no tomorrow. In a way I became the very subject of what I was investigating. Come to think of it, being distracted while working on a piece about distraction does have a nice "meta" ring to it.

In one of the more useful corners of the internet I found out that "distracted" was once a synonym for "insane"^{1,2}. In Shakespeare's Henry IV, a character named Falstaff utters the phrase "Poverty hath distracted her."³ Falstaff didn't mean that the lack of funds made the woman in question absent-minded; he believed that it made her insane.

Distraction still has a bad name today. Many people see it as the ultimate enemy of getting things done, but I think that in reality distraction is often misunderstood. Over the years I developed strange relationship with it. Sure, it has worked against me, but it has worked wonders for me as well. In college, I noticed that unlike many of my friends I didn't need total isolation and silence. I was surprised to find I was able to study better with a radio on, or with a flickering TV in my line of sight. Without these permanent distractions, I just wasn't able to keep focus.

If you think that's awkward, you would get along fine with my parents.

This triggered me to further investigate the phenomenon. Gradually, this became a personal journey - I set out to learn about distraction, but I ended up learned a lot about myself.

Imagine there is a bank that every morning deposits 86400 euros into your account. Every day this happens, over and over again. The only catch is that you cannot save that particular deposit until the next day. The 86400 euros you get in the morning are gone in the evening. What would you do? Would you think carefully about how you would use it each day?

The thing is, we all have this account available to us - except it's time we get to use. We all have 86400 seconds to spend every day. We cannot save them up. At the end of the day, they're gone.

Does that stress you out? Does this make you think of living differently?

We cannot hold on to these seconds, but we /can/ use them wisely. And by "wisely", I don't mean "being productive", at least not all the time. The real challenge is to manage our time so we can get the things done that really matter to us: we want to be happy, and at the same time be good partners, parents and friends. On top of that, we also want to excel professionally - we want to become better testers, coaches or managers

“Our life is frittered away by detail... simplify, simplify.”

- Henry David Thoreau -

We live in curious times. This is the Age of Information, but we might as well call it the Age of Distraction. Granted, humanity has never been free of distraction, but never have distractions been so overwhelming, so persistent as they are now.

At work, we have distractions coming from every direction: In front of us is the computer, with email and other notifications. In there, there is the addicting lure of the browser, which is nothing less than a black hole from which we can never escape - but it does offer unlimited opportunities for shopping, chatting and lolcat pictures. All the while, several new emails come in, waiting for a quick response. Several programs are open at once, the software under test one of them. And that is just in front of us. From the sides come a ringing desk phone, a ringing mobile, questionable music from coworkers, a colleague dropping by to ask a question, someone calling a meeting (and if we are lucky, someone offering a freshly baked cake).

On the way home, we are bombarded with advertisements, asking not only for our attention but also our money and desires. And all this continues well after we are parked on our driveways: television, home computer, iPad, kids and spouses - life in general.

With so many things competing for our attention, and so little time to focus on real work, it's a wonder we get any work done at all. So how exactly do we deal with this?

Some people claim to have found the solution: multitasking!

There is a slight problem with that, however: over the last twenty years, research has shown again and again that multitasking is a myth. When we think we are doing two things at once, we are almost always serial tasking - switching rapidly between tasks. We are not cruising along the information highway; we are stepping on the gas and then hitting the brakes, over and over. We are living in a state of continuous partial attention.

Our brain processes different kinds of information on separate channels - a language channel, a visual channel, an auditory channel, and so on - each of which can process only one stream of information at a time. If you overburden a channel, the brain becomes inefficient and prone to mistakes. If you have ever muted your car radio when being lost - I know I have - you will have experienced that the amount of attention we have is strictly limited, a zero-sum game. When all our attention is deployed to one modality - listening to the car radio - another modality suffers - in this case, the visual task of driving.

There are times when multitasking /does/ work, but only when following two conditions are met:

- > At least one of the tasks is so well learned that it is almost automatic, like walking or eating.
- > The tasks operate on entirely separate channels. For example, folding laundry (a visual-manual task) while listening to a test report (a verbal task). Which - I must admit - doesn't happen to me too often.

The figure below shows a model I created to help me to gain understanding of the forces at work in the system. It is by no means a scientific model - you will find that it is full of contradictions and paradoxes - but it does provide a good overview of the topics covered in this paper and the relation between them. I will cover the causes and different kinds of distraction, and highlight how distractions can be used to enhance focus and creativity. I will explain that phenomenon called procrastination and demonstrate that even that can be used in our favor. A good portion is reserved for focus and defocus, and tips and tricks to handle each one of them. I will conclude by explaining what all this means for testing.

Distractions are all around us. But why exactly is that a problem? Why are we so easily distracted? Can't we just ignore all things fighting for our attention? As it turns out, it is a little bit more complex than that. There are several factors - some human, some environmental - that cause us to be terminally distracted.

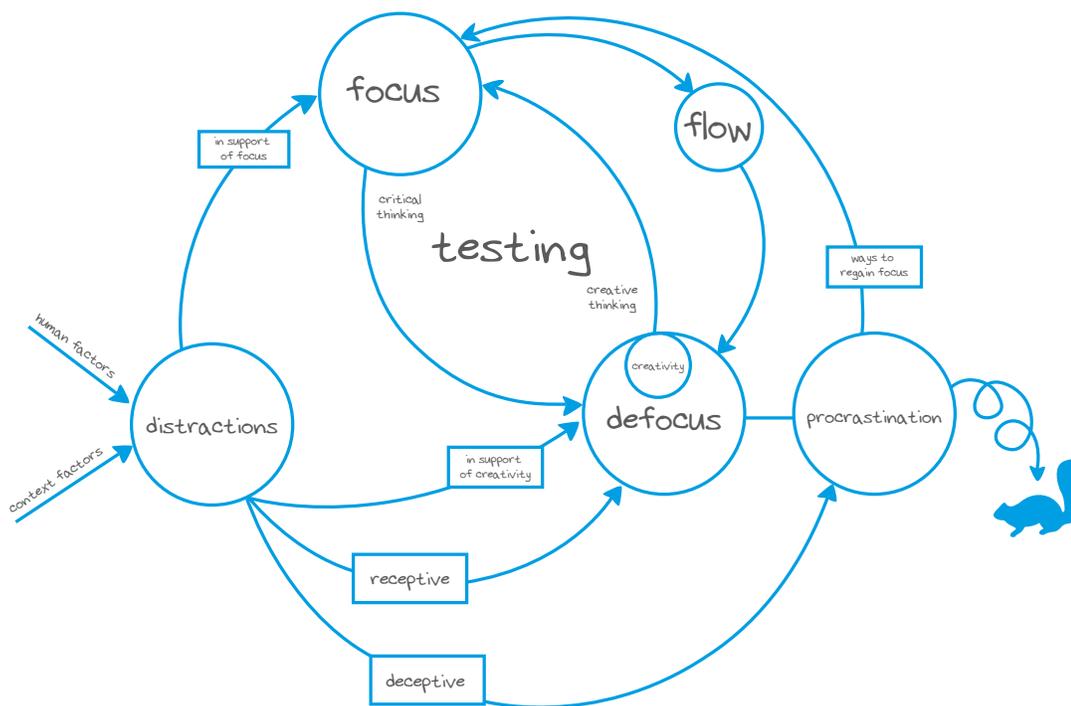


Fig. 1 - A Distraction Model

1. Human Factors

We are biologically wired for distraction.

We are biologically wired to be distracted⁴. When our ancestors were out hunting, and the bush next to them rustled, the ones who did not look up and see the lion coming at them – they are probably not our ancestors.

We are a daydreaming species.

According to a recent study by Harvard psychologists Matthew Killingsworth and Daniel Gilbert, people let their minds wander forty-seven percent of the time they are awake. In fact, the only activity during which we report that our minds are not constantly wandering is lovemaking – we are able to focus on that⁵.

We make a lot of decisions in the course of a day. However, as the graph bottom left shows, making decision after decision comes with a biological price⁶. Decision fatigue is different from ordinary physical fatigue. You are not consciously aware of being tired; rather you become low on mental energy. The more choices you make throughout the day, the harder each one becomes for your brain, which eventually starts looking for shortcuts: you start acting impulsively and it becomes harder to resist urges (e.g. the urge to check your mail, twitter or the urge to eat the contents of your fridge).⁷



Fig. 2 - Decision Fatigue

This is also the reason why supermarkets place candy at their counters. By the time innocent shoppers get to the exit, they lose all resistance after the multitude of decisions they had to take in the aisles. Bereft of their willpower, they are an easy prey, especially vulnerable to candy and anything else offering a quick hit of sugar.

With decision fatigue in mind, there are some valuable lessons to be learned: if you want to stay in control, avoid scheduling meetings back to back, and taking important decisions at the end of the day.

It's an addiction.

I recently learned that the most profitable parts of a casino are the slot machines, because use a principle called “Variable-Ratio Schedule”, also known as random payout. If you pull the handle on a slot machine and it pays you the same amount every hundredth time, you would quickly stop playing. But if it pays you a little bit some times, other times nothing and occasionally a lot, you are going to pull that handle a long time. Now think about text, email, twitter and Facebook messages in that setting: some are important, some are really trivial, and sometimes it's going to be something really urgent – they are random payout in your pocket.

2. Context Factors

Apart from these internal factors, there is also one big external factor that does that as well:

Jessica Hagy's graph on the bottom right⁸ hits the proverbial nail on the head. There is nothing wrong with acquiring more information, which is all good and clarifying. When the amount of information coming at us rises however, we get more confused instead. This is a phenomenon also known as information overload, a term popularized by Alvin Toffler in his 1970 book *Future Shock*⁹. Information overload refers to the difficulty a person can have understanding an issue and making decisions that can be caused by the presence of too much information.

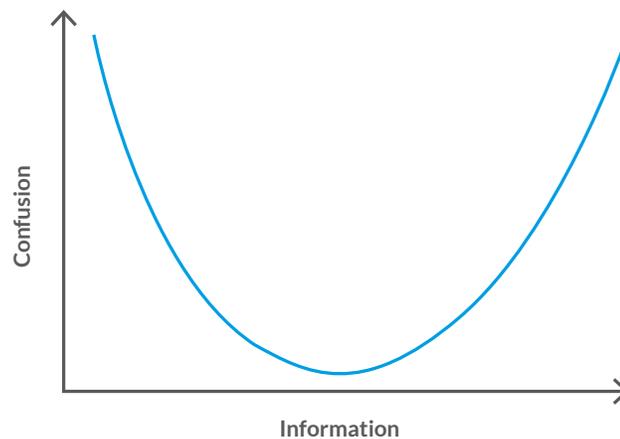


Fig. 3 - Information Overload

“It's not information overload. It's filter failure.”
- Clay Shirky -

Actually this external factor could be considered a hidden internal factor. Maybe we shouldn't be blaming the information that is out there. It's us who are not able to filter the chaff from the wheat.¹⁰

Distractions come in all shapes and sizes - and in roughly two categories: receptive and deceptive ones. A receptive distraction is any sort of distraction that creates

Two Types of Distractions

mental space, one that relaxes you and helps you regain your focus in the longer term. This can be as simple as getting a glass of iced-tea, or a walk outside for a few minutes.

Deceptive distractions are all things that make you lose track of what you were working on and cause you to get immersed in all sorts of other issues. Examples: M&M's (managers and meetings), emails, phone calls, the internet in general. Of course, this is highly person-dependent: some people do get energized by watching forty variations of the Harlem Shake.

The likelihood of a distraction being receptive is tied to whether it engages a different set of skills than the task being distracted from. For example, reading/writing code and reading/writing emails or blogs are activities so similar that they are almost always deceptive. In general, deceptive distractions are the kind of distractions that facilitate procrastination.

Procrastination

The figure below may be painfully recognizable for many - it certainly is for me. We keep putting off stuff that needs to be done, and decide to get busy only when a deadline is breathing down our necks. Afterwards we proudly say "I did it again", but in reality these situations are draining our energy.

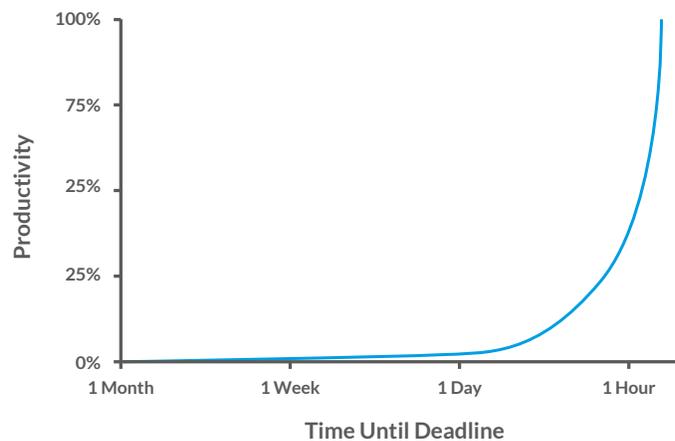


Fig. 4 - Procrastination in a nutshell

"Anyone can do any amount of work, provided it isn't the work he is supposed to be doing at that moment."

- Robert Benchley, 1949 -

This quote from Robert Benchley¹¹ summarizes procrastination well: in the face of a daunting task, all of a sudden everything else seems super appealing. Cleaning that desk? Oh, I need to do that to be able to work. And no way I can write without all my pencils sharpened. Yes, I know the work is urgent, but the lawn needs mowing.

There are a lot of misconceptions about procrastination. Some say it is plain laziness, others see it as attention deficit, but it is not. Procrastination does not mean doing absolutely nothing. When procrastinating you are actually doing all sorts of things, just not what you are supposed to be doing at that moment.

Procrastination is not a character defect, the main cause are underlying psychological problems that need to be addressed. We procrastinate to temporarily relieve deep inner fears:

- > Perfectionism that paralyzes you and keeps you from finishing stuff (“I need more time to finish that”, “no way, this is not ready yet”)
- > Fear of failure, of not being good enough (“I am not an expert in this stuff, I’ll make a fool of myself”)
- > Anxiety of starting and finishing (“If I manage to finish this, I’ll even get more of this stuff to do and more responsibilities”)

This causes a vicious circle of despair: we feel guilty because we haven’t done something, which makes us feel more stressed. If we feel more stressed we procrastinate even more.

I should note that there is a thin line between procrastination and defocus - that’s why it shows just that in the model. As James Bach mentioned in his 2009 book *Secrets of a Buccaneer-Scholar*, a lot of our procrastination leads to learning. Not always relevant for the task at hand, but possibly later on. Lots of our learning is a side effect.¹²

There I was, struggling in preparing this paper and the presentation to go with it, which was supposed to premiere at the Let’s Test conference in May. At some point I was desperate enough to join a Facebook group about creative productivity, which - I must admit - sounds like buying a chair about jogging. But to be honest, some good tips came to surface there. One of them was to observe your procrastination habits. Take note of your procrastination habits and note down when and why it happens. If you do this for a couple of days, patterns will start to emerge.

Mid February - in full procrastination frenzy - I stumbled upon the book “*The Now Habit*” by Neil Fiore.¹³ The book takes a look at the psychology behind procrastination and explains why and how we procrastinate. A couple of tools concepts in the book have stuck with me since:

Reverse Calendar

The reverse calendar is a backwards schedule of the task ahead: you start from the end goal or deadline and list all the smaller activities that need to be done in order to reach that goal. This simple technique forces you to split a big, daunting task into

smaller, more achievable chunks of work. Mapping it in reverse helps you to keep the end goal in mind.

The figure right gives you an idea what my reversed calendar looked like in February, three months before my not very negotiable deadline. Much to my surprise it worked for me: the exercise eased my mind a great deal, and all of a sudden three months looked like the sea of time it actually is.

| | |
|--------------------|--|
| May 22, 2013 | Presentation at Let's Test |
| May 17, 2013 | First dry run |
| May 12, 2013 | Presentation (Prezi) ready |
| May 04, 2013 | First draft of paper finished |
| April 01, 2013 | Rough outline finished |
| March 17, 2013 | Research - Backlog of articles |
| March 15, 2013 | Research - Checklist manifesto |
| March 08, 2013 | Research - Focus manifesto |
| March 01, 2013 | Start tool experiments |
| February 28, 2013 | Research - Now Habit |
| February 19, 2013 | Current day |
| February 11, 2013 | Submitted for EuroSTAR |
| September 23, 2012 | Submitted for Let's Test |
| January 2010 | Initial idea 'Testing In The Age Of Distraction' |

Table 1 - Reverse Calendar

Unschedule

Neil Fiore defines an unschedule as a week schedule, but with a twist. Instead of scheduling the work you have to do, you first fill in everything you want to do: first plan in time for social activities, play and hobbies and only then fill out the remaining gaps. This sounded relatively simple to do, so I decided to take a shot at it. I enrolled for a jazz initiation course, scheduled long overdue dinners with friends, even allocated some time for reading and watching television. I even put in some running during lunchtime breaks at a client site. When the fun slots were filled, I added the mandatory stuff (work times, meetings, other appointments, household matters). Only then I allocated time for the things I needed to work on.

The result of this change in perspective is that I felt refreshed and not guilty at all when not being productive, because it was all planned activity: guilt-free play. Furthermore, this changed my mindset from: "This week I have to work on my presentation for a minimum of 4 hours" to "I have a maximum of 4 hours to spend on my presentation". Subtle changes like this made me more eager to start the work.

Structured Procrastination

If you like science, but also like the sometimes delightfully absurd side of scientific research, The Ig Nobel Prizes are something worth looking into. They are handed out each year for unusual achievements in scientific research, and their stated aim is to “honor achievements that first make people laugh, and then make them think.” In 2011, the Ig Nobel literature prize went to John Perry of Stanford University, for his Theory of Structured Procrastination.

Perry’s Theory of Structured Procrastination¹⁴ states:

“To be a high achiever, always work on something important, using it as a way to avoid doing something that’s even more important.”

Perry is convinced that you /can/ use procrastination to get loads of important stuff done, if you just make sure to have that one thing that seems even more urgent and important. The trick is of course to pick the right sorts of projects for the top of the list. These ideal projects have two characteristics: first - they seem to have clear deadlines (but really don’t), and second - they seem awfully important (but really aren’t).

After the initial obligatory laugh, I found out that I was doing just that in my personal life. I recently became independent and I absolutely need to work on my website, since there only is a temporary one-pager up there now. The website is always the top item on my list, and I definitely need to start working on that, but I tend to avoid it by doing other useful work instead. That company website seems awfully urgent and important to me (but it really isn’t). And that deadline that I keep giving myself is rather imaginary. Self-deception for the win!

Using distractions as a way to focus sounds like a paradox if ever there was one. Aren’t distractions supposed to be the enemy of focus? That used to be my conviction as well, but vividly colored flash-backs to the time when I was able to focus and memorize better with TV and radio on made me look into the phenomenon. I stumbled upon a couple of scientific studies that might explain what was going on there.

High Brain Load

We testers are very familiar with the phenomenon of inattention blindness: when we focus intently on one task, we often fail to see other things in plain sight. A study by the Journal of Cognitive neuroscience¹⁵ shed a different light on this. If we bring our brain under high information load, our processing becomes selective, and apparently we can ignore irrelevant distractions more effectively. Basically this is a way to use inattention blindness to our advantage, when we are able to be blind for irrelevant details.

Unconscious Processing

When faced with a difficult decision, it is often suggested to “sleep on it”. New brain imaging research from Carnegie Mellon University finds that the brain regions responsible for making decisions continue to be active even when the conscious brain is distracted with a different task¹⁶. The most intriguing part about this is that participants in the study did not have any awareness that their brains were still working on the decision problem while they were engaged in an unrelated task. With complex decisions, a brief period of distraction - while your brain can unconsciously process information - can be advantageous for your decision-making and your learning. This means that distraction can not only help us process information better, but also enables us to learn.

I mentioned before that distraction is often seen as the enemy of focus, and it certainly is if you’re working on something that requires mostly logical thought. The problem here is that our brain has a “working memory” where the logical reasoning takes place. When our attention wanders, that working stack is dumped and it can take up to half an hour to get it back up to speed. Needless to say that the ability to focus is an important asset for a tester - here is a small selection of things that improved my ability to focus over the years.

The Beauty Of Disconnection

If you feel that social media are the source of your interruptions, your best bet may be to disconnect from the internet. Keep in mind though that timing is essential. If you plan a focused test session and plan to disconnect before you start, do not post a tweet or Facebook message right before disconnecting. Don’t tweet and quit. You will want to keep checking for reactions - that kind of random payout is highly addictive.

If your work requires access to the Internet, only turn off the things that risk distracting you. If you don’t trust yourself to do that, there are plenty of blocking tools or apps available to do that for you. Here are two that worked wonders for me:

- > SelfControl: blocks access to mail servers and websites for a predetermined period of time
- > StayFocusd: a Google Chrome extension that helps you stay focused on work by restricting the amount of time you can spend on time-wasting websites

You might also want to look into using multiple desktops on your computer. The idea is to put the software under test on one desktop, and have possible distractions like twitter or Facebook quarantined on the other.

- > For Windows, VirtuaWin is one such program
- > Mac OS has a multiple desktop functionality built in in the form of “Spaces”

You Don't Need To Respond

This also means cutting down on all sorts of notifications. I made my personal mantra "You don't need to respond". We have developed a need to respond to so many things, and before we know our day becomes responsive rather than driven by conscious choices. Here is a convenient truth: you don't need to respond - you can get in control and decide when you respond.

The (10+2)*5 Procrastination Hack

Merlin Mann's (10+2)*5 procrastination hack has three simple principles:¹⁷

- > 10 - Work for ten minutes with single-minded focus
- > 2 - After ten minutes of dedicated work, take a 2-minute break to do whatever you want
- > *5 - Iterate this four more times for a total of one hour

I first started using this nifty little technique intensively in the spring of 2012 when I was programme chair for EuroSTAR. I had to work my way through more than 420 submissions, and I soon learned that consuming large amounts of awkwardly formatted text brimming with buzzwords really threatens your sanity. My first attempts at making progress were not very successful, but from the moment I forced myself in the rigid structure of the procrastination hack, my productivity tripled. Many variations on this hack exist (the Pomodoro technique,¹⁸ among others), but they all have the same core elements in common: strict time-boxing and short breaks.

In my experience, these short time-boxing techniques work really well with easily divisible logical/analytical tasks, like going through defect lists or reviews of any kind - but they don't match well with more creative, test design work. Creative people - designers, programmers, writers, engineers, thinkers and sometimes testers - typically need longer stretches of uninterrupted time to get their creative juices flowing. You cannot ask somebody to be creative in 15 minutes and really think about a problem. You might have a quick idea, but to be in deep thought about a problem and really consider a problem carefully, you need long stretches of uninterrupted time. Creativity needs time in order to unfold in unpredictable ways.

Test Approach: Time-Boxed Focused Test Sessions (SBTM)

This is also the reason why in exploratory testing sessions longer time boxes are usually a good idea. A typical format when doing exploratory testing is Session Based Test Management (SBTM),¹⁹ with a time box (the session) and a defined scope - the charter. Here's how I usually manage my focus in such a session:

- > I block off time for the session (1 to 2 hours), close email and Instant Messaging systems, let people know that I'm in a session (or arrange a meeting room if necessary)

- > Before I start, I already open up everything I think I'll need to do my testing effectively: applications, databases, spreadsheets, tools, etc. This prevents me from getting distracted or slowed down mid testing
- > Once the session started, I don't stop my testing to write up defects or to ask questions – I note them while I test, and I come back to the issues and questions later when the session is completed
- > I plan faster tests and higher risks tests (or tests more important to the business) first
- > I group features together to reduce context switching while testing

The To-Not-Do List

Another tool I started using is the to-not-do list. The concept is brilliant in its simplicity: at the start of every month, sit down and list all the things on your mind that you're not going to worry about doing that month. What could be more time-saving than that? As Jerry Weinberg stated in *More Secrets of Consulting*: "Anything not worth doing is not worth doing right."²⁰

Have you ever found yourself in a state of totally being in the zone, so involved in an activity that nothing else seemed to matter anymore? That is flow, the ultimate state of being focused, the Walhalla of focus if you like. The term flow was coined by Mihály Csíkszentmihályi in his 1990 book "Flow: The Psychology of Optimal Experience."²¹ His flow theory states that three conditions need to be fulfilled to achieve a flow state:

1. One must be involved in an activity with a clear set of goals and progress
2. The task at hand must have clear and immediate feedback
3. There is a good balance between the perceived challenges of the task at hand and our own perceived skills. It all boils down to having confidence that we are capable to do the task at hand

With this in mind, how could we as testers increase the chance of achieving a flow state in our work?

1. Clear set of goals and progress. This can be accomplished when we add direction to our testing: have a clear mission, and guide that mission with charters while testing
2. Clear & immediate feedback. There are ways to enable quick feedback during. Working in an exploratory fashion is a good way to make the feedback immediate: you design a theory, test for that theory and immediately see the result of that
3. The higher the skill level, the greater the confidence in our capability, and the higher the chance of getting in a flow state

But in all this looms a paradox for testers:

In order to achieve flow, Csikszentmihályi says, people should be able to suspend their critical abilities for a while. But what happens when testers suspend their critical abilities? They probably will start missing important stuff. The feeling of flow can also work like an opiate, as it feels good to do things we are good at. Beware of the opiate of expertise: to improve, we sometimes have to seek discomfort and step out of our comfort zone.

If you ask people when or where they get their best ideas, the same similar answers come up. Most people will tell me “in the shower”, “in the car”, “while running”, “while walking in nature”, “when thinking about other stuff”. Personally, I have gotten my best ideas either when running or during long commutes in the car.

Mind-Wandering Promotes Creativity

Ideas typically don't occur when we are focused on tasks. They happen when the mind starts wandering. You could say that mind-wandering promotes creativity: it is unconstrained and can go anywhere, which is the perfect condition for creative thought. In recent years, psychologists found that mind-wandering is an essential cognitive tool: daydreams seem to have a similar function as night dreams, facilitating bursts of creative insight.^{22, 23}

Chance Favors The Connected Mind

In his 2010 book and TED talk on where good ideas come from, Steven Johnson explains that great ideas generally occur thanks to the combination of your hunch with someone else's hunch. To get to that point, you need to place yourself in environments that foster good collaboration. Historically, he saw that happen in coffee shops, where scientists could meet face to face to exchange ideas. Nowadays, while the internet can often be a distraction, it can also be a fantastic collaborative environment.²⁴

Social media are a double-edged sword. While they often are the portal to procrastination and oblivion, they can do wonders for testers as well. So far, twitter has proven to be the most valuable of them all. It has helped me to:

- > Virtually attend testing conferences, even mingle in the discussions - all it takes is the right hashtag (e.g. try #esconfs, #LetsTest, #CAST201x or #AgileTD for starters)
- > Bounce off new ideas on my followers. It is an instant-feedback sounding board. I often give other people feedback on their ideas too, which in turn inspires new ideas. Twitter's function as an idea fertilizer / incubator cannot be underestimated

- > Facilitate connection in real life. The Dutch Exploratory Workshop on Testing (DEWT) was formed by a couple of guys discussing on twitter and suggesting to meet up some time

During testing you can use Twitter to get in touch (and familiarize yourself) with the users of a product, and see how they perceive the service being delivered. Pradeep Soundararajan showed an eye-opening and at times hilarious example of something he called Twitter-driven exploratory testing²⁵ at the Øredev conference in 2011. Pradeep used twitter as a source of test ideas by entering the company name as a search term and looking for emotions associated with those tweets (ranging from sad smileys over #fail to a plain old #f**k). Being aware of your (and other people's) emotions is one of the most important oracles for a tester in order to find bugs.

Ambient Noise (Also Known As “The Coffee House Effect”)

A paper in the Journal of Consumer research found that ambient noise can affect creativity. Results from experiments demonstrate that low (50 dB) to moderate (70 dB) levels of ambient noise enhance performance on creative tasks, while high levels of noise (> 85 dB) hurt creativity.²⁶

Behold, the secret behind that productivity boost in coffee bars.

For the unfortunate few that don't have the luxury to go working in coffee bars, there is a website that will bring you in the right creative mood using ambient noise from coffee houses - minus the coffee: coffitivity dot com. This is great news for the agoraphobics among us: you can now get all cozy and creative without even having to leave the house.

Defocus

Dictionary.com defines the verb “defocus” as follows: “to lose concentration or awareness; become distracted”. Since people cannot stay concentrated indefinitely, defocusing is a natural reflex for us. This is often fed by distractions. When receptive, they help us defocus from the tasks at hand and refresh our minds, which in the end - paradoxically - will help us to focus better.

A lot of people look down upon defocusing, thinking that staying focused is the only way to get things done. But if study professional athletes, you will notice that rest days are an explicit part of their training programs. Their coaches plan for them because an athlete's body absolutely needs to recuperate and recover in order to come out stronger.

Everyone accepts that athletes rest their bodies, since they are in such a physical line of work. Is it such a crazy idea that we, as knowledge workers, plan for rest as well to let our brains recuperate and to rejuvenate our thinking?

I think this addresses an important issue affecting testing. When solving testing problems, people always assume that you get more done when you are consciously paying attention to a problem. After all, that's what it means to be "working on something". But if you are trying to solve a complex problem, you need to give yourself a real break. Whenever creative thinking is needed, our mind performs the best when we're defocused.

There also is a lesson here: beware of going off on an appearance of work. Knowledge work doesn't always look like work. I made this mistake once: at a customer site there was this one person I didn't know too well who was constantly going outside for coffee and cigarettes. When I mentioned to someone that that person was probably not their most productive or motivated employee, they were surprised: "No, no, he is the mastermind behind our whole new program - he has to go outside - that's where he does all his thinking!" They knew, I didn't - I will never make that mistake again.

The "Follow Your Energy" Heuristic

While testing, sometimes you just got to follow your energy. It is okay and natural to let your mind wander. When you allow yourself to be distracted, your mind will start making connections. This is what James Bach calls the "Follow your Energy"-heuristic. If you want to be more in control of your learning, it is advised to combine the "Follow your Energy"-heuristic with the "Long Leash"-heuristic. Let your mind drift off, but in a controlled manner - keep it on a long leash. Every now and then, remind yourself that you are on a mission and gently pull on the leash to regain focus again.²⁷

The "Get A Coffee" Heuristic

In the product I'm testing now, I came across some crashes that seemed random and were really hard to reproduce. After a while I noticed that the frequency of those bugs was higher right after lunch or after coffee breaks, when the application stayed open for a longer time. As it turned out, quite a lot of them were time-related, and not related to the actions done in the user interface.

From that moment on, I've been using the "Get-a-coffee" heuristic: take a break, go do something else for a while - works wonders for bugs that are impacted by time, but it is also great for bug finding in general: you tend to see things in a new light when defocused: fresh eyes find failure.

Last year I tested apps on digital TV. It were educational apps consisting of well-known children's stories with a karaoke-style text you could follow along - great for kids who are just learning how to read. One afternoon, I did a focused test session of the help pages that were there in four different languages. I found a major bug concerning the fact that some text was in the wrong language. After some intensive further investigation, I was convinced that had I found the most important bugs and

decided to stop testing. Until I took a coffee break, returned and noticed that the wrong screenshots were shown, something I failed to see for three hours in a row.

Notetaking

Work on your note taking skills. Always be ready to capture, everywhere. Inspiration strikes at strange times: right before you fall asleep, right after you wake up, in the shower, while running, in the car. You will forget most insights if you don't immediately write them down.

I keep a notebook on my night stall. I use Evernote on all my devices. It's available on different platforms and able to store snippets of text, websites, even spoken text. I tend to get lots of ideas while running or driving in the car, and I record spoken notes with my phone's voice recorder and mail them to Evernote. My Evernote library is what Steven Johnson would call a "spark file", a file that contains all your half-baked ideas in one place. The trick is to reread your stack every three or four months to get new insights and detect previously undiscovered relationships.²⁸

Work With Your Own Circadian Rhythm

Your circadian rhythm is your internal biological clock. The trick here is to get familiar with your biological clock and plan accordingly. This sounds like common sense, but surprisingly this kind of common sense isn't too common: avoid scheduling an important meeting or a focused test session at a time when you will be operating on only one cylinder. And don't waste your peak work time at a doctor's appointment.²⁹

Guilt-Free Breaks

As I mentioned above, taking regular guilt-free breaks is essential to being productive. The problem with that is that you need to get back to work at some stage. When you get back from a break, you cannot just restore your "working stack" from backup, you have to overcome some resistance to starting again. Here are two techniques for getting the best out of breaks: priming and leaving breadcrumbs.

Priming

Priming is very easy. Before you take a break, just identify the next problem that you face in your work and think about it for a few seconds. Just think "I'll need to have decision on this by the time I come back" and let unconscious processing do its work.

Leaving Breadcrumbs

Hänsel and Gretel used the breadcrumbs technique first, but it didn't really work for them. We can apply the same technique to mitigating the downside of having a break: simply dump your "working stack" on a piece of paper or a text editor. You don't need to write a whole novel, a few well chosen words can jog your memory will make it much easier to restore your working memory from its backup.

Closed / Open Mode Thinking

In a lecture on creativity in 1991, Monty Python’s John Cleese contrasted “closed” with “open mode” thinking. Closed mode is the thinking mode we are typically in when at work: active, tense, anxious, purposeful, trying to get things done, stressed and a bit manic. This is when our mind has focus. In contrast, open mode is relaxed, not purposeful, more humorous, playful and curious, because we’re not under pressure to get anything done.³⁰

***“This is the extraordinary thing about creativity:
If just you keep your mind resting against the subject in a friendly but
persistent way, sooner or later you will get a reward from your unconscious.”***
- John Cleese -

Cleese argues that creativity is not possible in closed mode. Only when our mind is in open mode – which maps to a defocused state - creative magic can happen. In practice, there should be a time and place for each mode: developing ideas and reviewing concepts are best done in open mode, while deciding and carrying out a plan of action are typically done in closed mode.

Creative / Critical Thinking

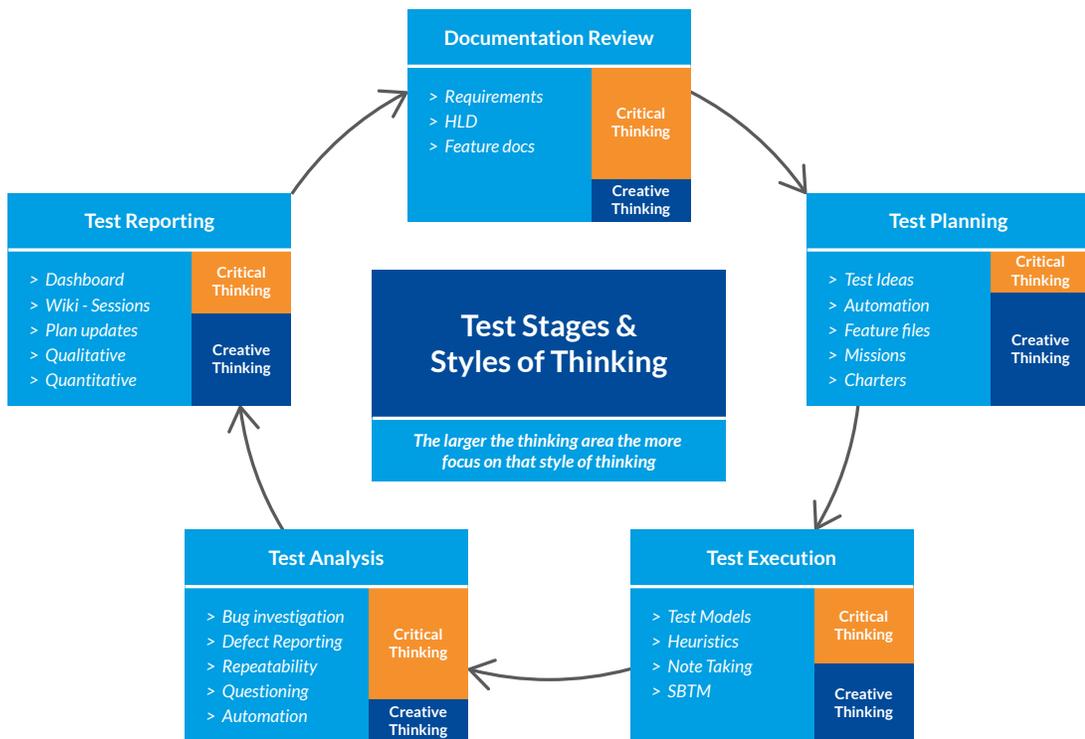


Fig. 5 - Test Stages and Styles of Thinking – John Stevenson

In a blog series earlier this year, John Stevenson wrote about creative and critical thinking, and which style of thinking to use in the different phases within testing.³¹

Creative thinking is the generation of new ideas. It is divergent – going in different directions. Critical thinking is thinking about thinking, with the intention of avoiding being fooled. It is convergent – bringing ideas and thoughts together.

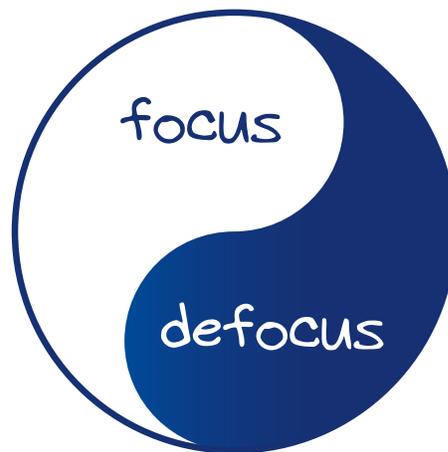
John came up with the diagram above, in which is clear that we need both styles of thinking in all of our testing efforts, but some activities rely heavily on critical thinking (e.g. reviews and analysis) while others mainly need creative thinking (e.g. generation of test ideas while planning). Activities like exploratory test execution (session based testing, note taking) need a good mix of both to be done well.

John Cleese's theory and John Stevenson's diagram illustrate the point I would like to make: to test effectively, we need to be able to switch between open and closed mode, between creative and critical thinking. In other words, managing our focus is a very important skill in testing. To think critically, we need to be focused. To think creatively, we need to embrace defocus. The trouble is that we often get stuck in tunnel vision when we would really need to step back and contemplate the wider view.

Focus is a paradox - it has distraction built into its very core. The two are symbiotic; they are like the yin and yang of consciousness. Focus and defocus are complementary (instead of opposing) forces interacting to form a dynamic system in which the whole is greater than the parts.

If humans are not designed to avoid distractions, why don't we harness, rather than fight, the power of distraction? That is the question I asked myself a while ago, and that was what I started doing over the last months. Thinking about how focus and defocus interrelate and how they can be used to our advantage gave me a better understanding of myself. It has changed the way I approach things. As a tester, it has made me more aware of traps and prejudice. Looking back, I now make more conscious choices in my work:

- > I no longer see my procrastination as something bad. I'm now more aware when it happens, and it doesn't freak me out anymore. Much to my surprise I was able to start using it to my advantage.
- > I now make conscious use of unconscious processing: instead of diving head over heels in a problem or a task, I study the problem, read up on it and then I decide to unwind, without feeling guilty about it.
- > I started paying attention to the nature of the activities that need to be done. For the focused, logical tasks that require analytical thinking, I get disconnected and set time boxes with regular breaks. For tasks requiring a good amount of creative thinking, I make sure I'm connected and distractible.



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