Critical Reflection

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Creativity as a process of mind can be defined as those processes that create new, or strengthen, neurological bindings in the brain; essentially connecting new dots. For this process to function, inspiration, in the sense of relevant previous experiences and knowledge, need to be present; if not, there are fewer possible dots to connect. Critical thinking on the other hand is a process of mind that assemble, associate, relate and synthesize aspects of a problem or situation at hand through a thorough and reasoned approach (McDonough, 2002; Halford & Wilson, 2002; Weisberg & Reeves, 2013; Calvo & Symmons, 2014). In our last session together in this subject, I spearheaded the fairly triangular model of critical and creative thinking, and I will in this essay reflect further on this model in relation to my manifesto and in relation to and in reflection of the two modes of thinking.

Entity/Process

Synthesis (Critical)

Lateral breadth of scope

Time

Expansion (Creative)

Lateral breadth of scope
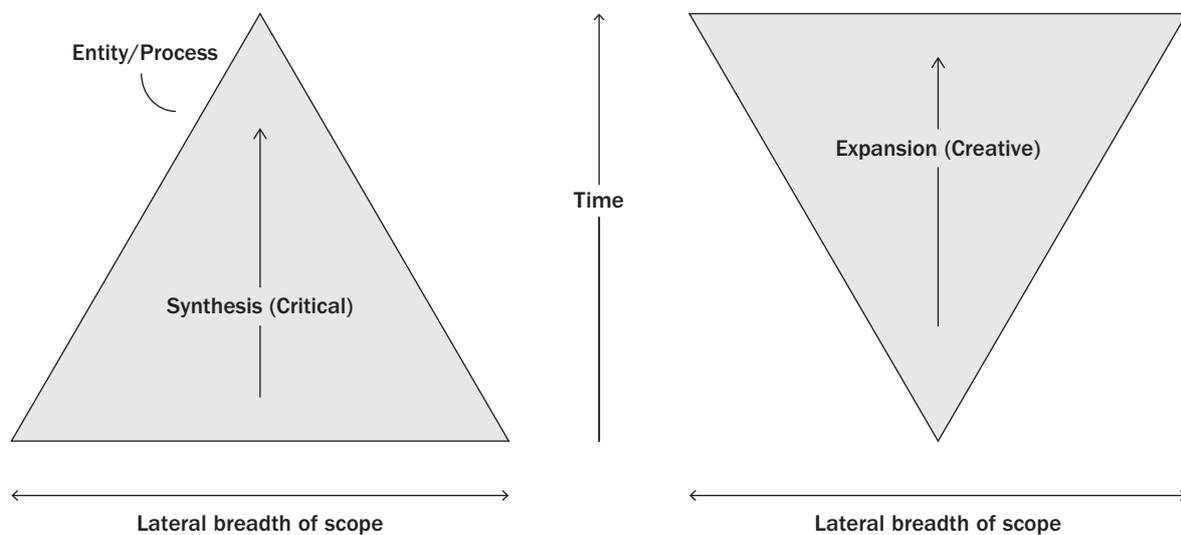
Fig. 1:   How the direction of the diagonal lines in the triangles are used to indicate either a critical process or a creative process

In its simplest form, the model presented used the direction of the diagonal lines in a triangle to connote respectively the expansion or synthesis in scope of thought. One triangle can then be seen as one process in relation to many. The idea for this model stems from the model for creative processes that I was thought when doing my undergrad, called the SPIN-model. The SPIN-model stipulates four levels of data gathering and idea development of which two are expansive and two are synthesising (Kjersem, Skjelstad, & Meier, in press). After researching and in dialogue with a professor at my undergrad, I have further found this model to resemble that of the Double-Diamond Process Model created by The British Design Council ("The 'double Diamond' Design Process Model," 2008). The resemblance between those model and this one is in how triangles are used to indicate a process of expansion or synthesis. When tessellating these triangles into a larger shape, one can start to see how critical and creative thinking can become "turtles all the way down" (where there will always be aspects that has not been answered) and how the complexity and thoroughness of the 'argument' grows. The critique of the model during the session argued that it very well showed the complexity of

critical thinking, but that it was not apparent how it related to creative thinking. I will use this essay to elaborate on this by taking a closer look at how critical and creative thinking relate to each other.
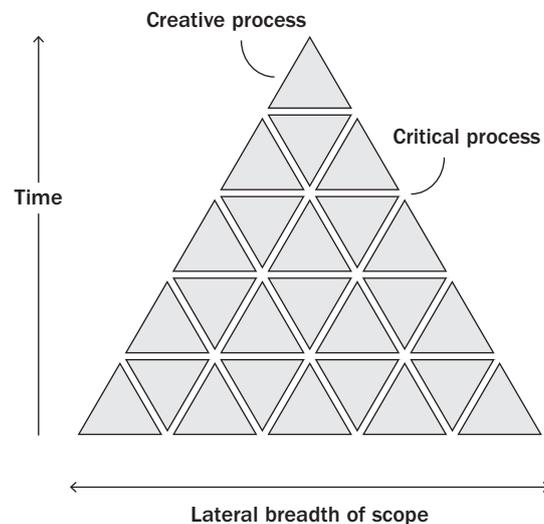
Fig. 2:   A tessellated model of the concepts and how they complement each other

Under my understanding, critical and creative thinking are two sides of the same coin; they both occupy the space of probing for an answer, but under different circumstances and goals (Vartanian et al, 2013; Weisberg & Reeves, 2013). And if you focus on one side of the coin, it hides the effect of the other. Critical thought and creative thought both require one to broaden ones input, a process which in critical thinking is readily apparent; critical thinking *is* taking larger lateral and vertical considerations carefully and decisively into account (Rehn & De Cock, 2009; Benson & Dresdow, 2009).

When thinking in creative terms, lateral thinking by considering ones experience and knowledge is more of a means to an end; lateral thinking is only done in order to find the best or most unique dots to connect (Sawyer 2006; Sloane, 2006; Halford & Wilson, 2002). In putting these up against each other, we can in simple terms say that the foundation for critical thinking is research, and that the foundation for creative thinking is inspiration (Tittle, 2011; Weisberg & Reeves, 2013). Further, looking at the model, we can use this knowledge and the analogy of the coin, or a mirror image, and say that these two concepts then work to complement each other.

The two concepts are both cognitive concepts; they are cognitive directives that use a rationale to synthesise or dissect disconnected entities in the brain in order to progress towards a goal. In their book about cognition, Weisberg & Reeves (2013) put forward a discussion about our rationality and about the fallacies that incur us. Weisberg & Reeves (2013) argue for, what I also discussed in the previous essay citing Kant (2005) and Kahneman (2011), that we are not as rational beings as we would like to think. That our thoughts are not and can not be pure, the world Kant (2005) portrays can never be, and although most of us want to

exercise rationally and logically we need to remind ourselves to question and to probe as it might not come as natural as we might want. This effectively argue that critical thinking is a vital skill in exercising more rational thought. But it would seem obvious to argue that critical thinking is, or tries to be rational.

Sloane (2006), who look specifically to the concept of lateral thinking, argue in his book for asking searching questions and that not doing so "is natural and fatal" within a business context, and it can further be argued that it would definitely apply to a larger set of situations. What Sloane (2006) and Weisberg & Reeves (2013) is arguing for, is critical thinking; for its all-spread use and importance, and it is not hard to find good arguments for why one should think before acting. The rationale for critical thinking seems clear cut, but to what extent is creativity also a part of the rationality of a critical mindset?

Before we go any further, I want to point out that this is where I see my manifesto originating from; in the realm of invisible creativity. It is also a key point in establishing the tessellated version of the model presented; any efforts at critically vetting a process of mind will first require synthesis, but the result of these synthesises will then need to be expanded into further arguments; you need to understand the problem before you can engage in tackling it. Under the loose definition of creativity, of which there does not exist an explicit routine for reasoning forwards to the goal but where knowledge and experience define the lateral scope, creativity will in its smallest form be available for building a reasonable inductive model of the problem.

An example of just this relationship between the two concepts can be found in Sawyer (2006) on the topic of the creativity of scientists. What Sawyer (2006) argue for is that logical empiricism does seldom in itself explain data through mechanical derivations and "because data under-determine theory, it takes creativity to bring together all of the competing theories and all of the potentially relevant data and come up with a framework that best explains the data." In other words, synthesizing by the way of deduction is not sufficient, and the construction of creative and alternative models of interpretation will help better understand the available data through the way of induction. Einstein's general theory of relativity is a perfect example of a theory that initially was just an inductive argument that by all means questioned and probed the available data. By creatively building upon knowledge, but without supporting data and after numerous attempts, the argument was made for a theory that could explain aspects of the universe in a new way. In order to test the theory, creative thinking brought forward a model that could be put in action, and later the data was critically assessed (Sawyer, 2006; Hawking, 1988). When it comes to this act, of moving back again from a creative inductive argument and over to assessing rationally and with reason, Bayesian inferences is a very interesting concept. Bayesian inferences is a clear example of how someone brought forward a 'technique' to reason and update this reason for a hypothesis (Klarreich, 2015; Hartigan, 1983). It is not that this technique is any special or that it I would necessarily argue for such a mathematical model of stepping through the process if not under very critical and empirical circumstances to avoid cum hoc ergo propter hoc, but I

think it demonstrates the interesting overlap and relationship that these two concepts inhibit (Tittle, 2011). As one moves through the process axis of the tessellated version of the model, inferences in general are used dynamically to re-evaluate synthesized arguments and thereby shift and update the direction of the process.
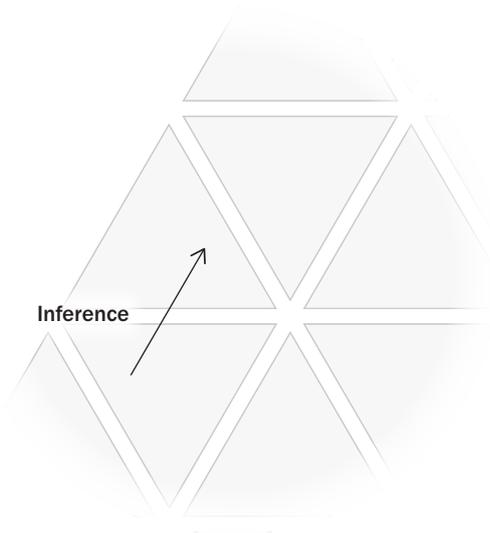

*Fig. 3:*   Inferences as a force interacting with the model

So by now we have clearly established what one triangular entity in the tessellated model is, what the lateral space is and how inferences affect the focus of the hypothesis or process. Next we will look at the synthesizing of the process towards the goal by looking back to Sloane (2006).

" *A ship is safe in the harbour but that is not what a ship is for*

— ALBERT J NIMETH (Sloane, 2006 p.62)

Sloane (2006) argues for *adopting, adapting and improving*, a process which easily translates visually into the time axis of our model. The process outlines three phases; (1) *adopting* a concept by coming to an understanding of what it is and how it works, (2) *adapting* the concept by taking it in and merging it with the requirements of the goal at hand, and when implemented (3) learning from the merge and *improving* the concept.

If we consider each level of our model as one of Sloane's (2006) phases we can consider that for each phase a larger focus would, alternating, be put on one of the two concepts. As improving is considered a result of the process, only the last level will be called "improve." The concept that for any level is not in focus would complement the other as a supporting process; creativity requires parallel critical thinking and vice versa.
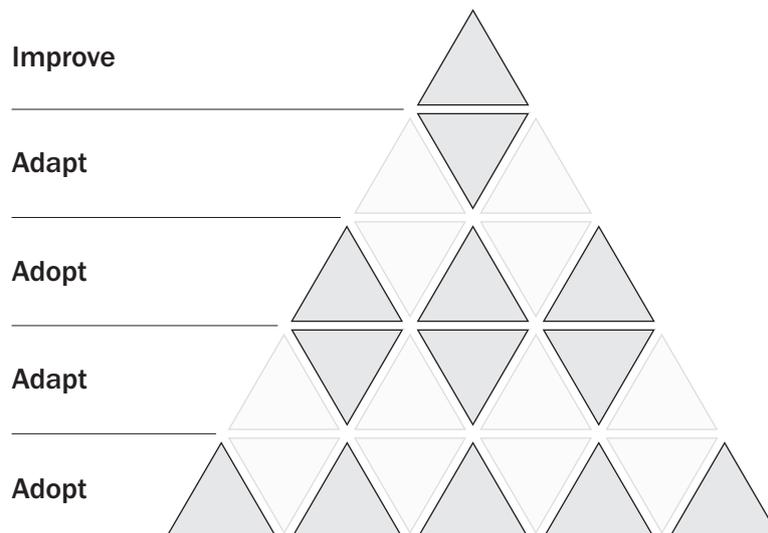
Fig. 4: Sloane (2006) adopt, adapt and improve overlaid on the model

Lastly we will go back to Weisberg & Reeves (2013) and Kahneman (2011) and grapple a last concept, namely the errors and bias that we fall under and how this relates to our model. Kahneman (2011) on the ground of a large body of research that earned him a Nobel Prize argue for how our brains, in an effort to free up resources and optimize efficiency, create shortcuts that occasionally can become very misfortunate and clouding when searching for true results. Biases and fallacies that Kahneman and others have discovered—such as confirmation bias, availability heuristics, group-think, stereotyping and base rate fallacies—cloud our judgement of data and arguments, and is in itself a clear argument for critical thinking (Kahneman, Lovallo, & Sibony, 2011). To escape these, the knowledge and arguments upon which we build towards the goal, needs to be solid, clear and well-founded (Murray & Kujundzic, 2005; Vartanian, 2013). This does of course apply considerably more to an inherently critical process than to a creative process, but is nonetheless an important consideration for both the concepts. Just as updating our reasoning as we did with inferences we can steer the direction of the process clear of bad data, biases, fallacies and faulty reasoning by becoming aware of their presence (Walton, 1987). For our model we can consider that bias, fallacies and bad heuristics are external and internal forces acting upon our process as seen from a top down point of view.
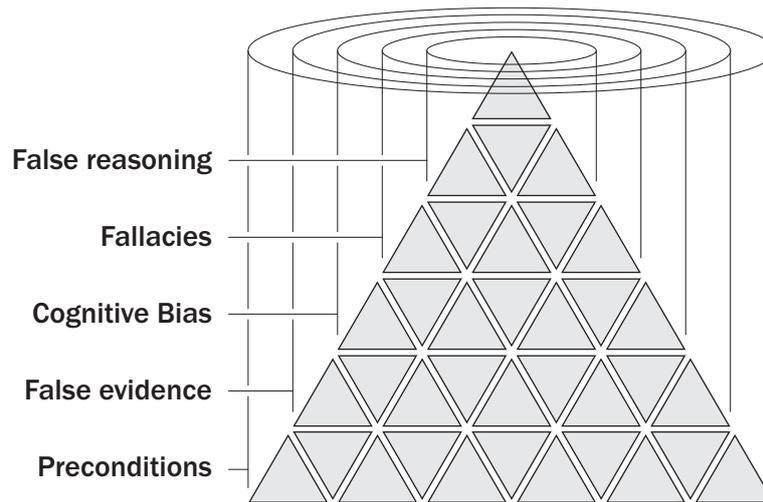
Fig. 5:   A, not exceedingly empirical, example of forces that can
cloud the process or argument

In summarizing, critical and creative thinking are two concepts of mind that both adhere to a lot of the same rules in that both, need direction, are inflicted with errors and are more effective the more effort is put in to the diversifying the lateral scope and strategically work towards the goal. I haven't discussed too much about how my manifesto relates to this. It doesn't argue for Sloane's (2006) model, nor does it argue for better updated reasoning with inferences, but it does argue for the lateral potential we all possess. It argues for expanding the lateral scope in its small print, and it argues for the importance and acknowledgement of everyday creativity. On the surface, it is a statement of intent, direction and momentum. Under a closer look, the breadth of the questions in the small print provide perspectives and divergence from what we usually think about, and give the user a deeper value.

My personal standing in this hasn't really changed before starting this subject; building upon years of practicing algorithmic logic, thinking in a systematic way has been ingrained into the way that I think and visualize—which might be reflected in how I in this have visualized the two concepts. When I then also primarily have done creative marketing communications related projects, the process of connecting new dots and connecting these in such a way that it results in a coherent and solid strategic direction also becomes a natural way to think. Where my knowledge and interest has been built over the last year and a half is in my understanding of the psychology and philosophy of decision making—essentially an general interest in how we think. And wanting to take a closer look at how we act and function was one of the main reasons why I decided to take a postgraduate degree in the first place.

2   References

Benson, J., & Dresdow, S. (2009). Common sense and integrative thinking. *Management Decision*, 47(3), 508 - 517. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=bth&AN=42846909&site=eds-live&scope=site

Calvo, P., & Symmons, J. (2014). *The architecture of cognition: Rethinking fodor and pylyshyn's systematicity challenge*. The MIT Press. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10861576

The 'double Diamond' Design Process Model. (2008, May 7). *British Design Council [Web Archive]*. Retrieved from webarchive.nationalarchives.gov.uk: http://webarchive.nationalarchives.gov.uk/20080821115409/designcouncil.org.uk/en/about-design/managingdesign/the-study-of-the-design-process/

Hartigan, J. A. (1983). *Springer Series in Statistics: Bayes theory. [Electronic resource]*. New York, NY : Springer New York, 1983. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=cat00006a&AN=melb.b5461192&site=eds-live&scope=site

Hawking, S. W. (1988). *A brief history of time : From the big bang to black holes*. London : Bantam, 1988. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=cat00006a&AN=melb.b1544604&site=eds-live&scope=site

Kahneman, D. (2012). *Thinking, fast and slow*. London : Penguin, 2012. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=cat00006a&AN=melb.b4827859&site=eds-live&scope=site

Kahneman, D., Lovallo, D., & Sibony, O. (2011). Before you make that big decision...: Dangerous biases can creep into every strategic choice. Here's how to find them - before they lead you astray. *Harvard Business Review*, (6), 50. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=edsgao&AN=edsgcl.257774121&site=eds-live&scope=site

Kant, I. (2005). *Groundwork for the metaphysics of morals*. Peterborough, Ont. ; Orchard Park, NY: Broadview Press. (Original work published 1785)

Klarreich, E. (2015). In search of bayesian inference. *Communications of the ACM*, 58(1), 21 - 24. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=bth&AN=100097078&site=eds-live&scope=site

Murray, M., & Kujundzic, N. (2005). *Critical reflection: A textbook for critical thinking*. MQUP. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10577922

Rehn, A., & De Cock, C. (2009). Deconstructing creativity. *The Routledge Companion to Creativity*, 222-231. Retrieved from Google Scholar.

Reynolds, M. (2011). Critical thinking and systems thinking: Towards A critical literacy for systems thinking in practice. In C. P. Horvath & J. M. Forte (Eds.), *Education in a competitive and globalizing world: Critical thinking. [Electronic resource]*. New York : Nova Science Publishers, 2011. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=cat00006a&AN=melb.b5584204&site=eds-live&scope=site

Sawyer, K. R. (2006). *Explaining creativity*. USA: Oxford University Press. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10142506#

Kjersem, A., Skjelstad, C. N., & Meier, H. G. (in press). *Spinn - En Metode for Ideutvikling*. Retrieved from www.dropbox.com: https://www.dropbox.com/s/g2x4nk7hn53hcw6/Spinn_Bok.pdf?dl=0

Sloane, P. (2006). *Lateral thinking: Unblocking the creativity and innovation in yourself and your team*. Kogan Page Ltd. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10167422

Staats, C. (2015). Understanding implicit bias. *American Educator,* 39(4), 29 - 45. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=ehh&AN=112081048&site=eds-live&scope=site

McDonough, R. (2002). Emergence and creativity: Five degrees of freedom. In T. Dartnall (Ed.), *Creativity, cognition, and knowledge*. Greenwood Press. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10023324

Wilson, W. H., & Halford, G. S. (2002). Creativity, relational knowledge, and capacity: Why are humans so creative? In T. Dartnall (Ed.), *Creativity, cognition, and knowledge*. Greenwood Press. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10023324

Tittle, P. (2011). *Critical thinking. [Electronic resource] : An appeal to reason*. Hoboken : Taylor and Francis, 2011. Retrieved from https://ezp.lib.unimelb.edu.au/login?url=https://search-ebscohost-com.ezp.lib.unimelb.edu.au/login.aspx?direct=true&db=cat00006a&AN=melb.b5932295&site=eds-live&scope=site

Vartanian, O., Bristol, A. S., & Kaufman, J. C. (2013). *Neuroscience of creativity*. The MIT Press. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10759265

Walton, D. N. (1987). *Pragmatics and beyond companion, volume 4: Informal fallacies: Towards a theory of argument of criticisms* (Vol. 4). Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10515881

Weisberg, R. W., & Reeves, L. M. (2013). *Cognition: From memory to creativity* (1). Wiley. Retrieved from site.ebrary.com: http://site.ebrary.com/lib/unimelb/reader.action?docID=10657781