

Critical Thinking

A Guide for Systems Thinkers



What we Cover in this Guide

This guide is designed to help you improve your critical thinking skills as foundational to becoming a better systems thinker. We firstly cover the 'what' and 'why' of critical thinking before delving into the four main areas outlined below. By the end of this guide you should have a better understanding of the importance of thinking critically, a greater awareness to the assumptions that go into your thinking and your processes of inference.

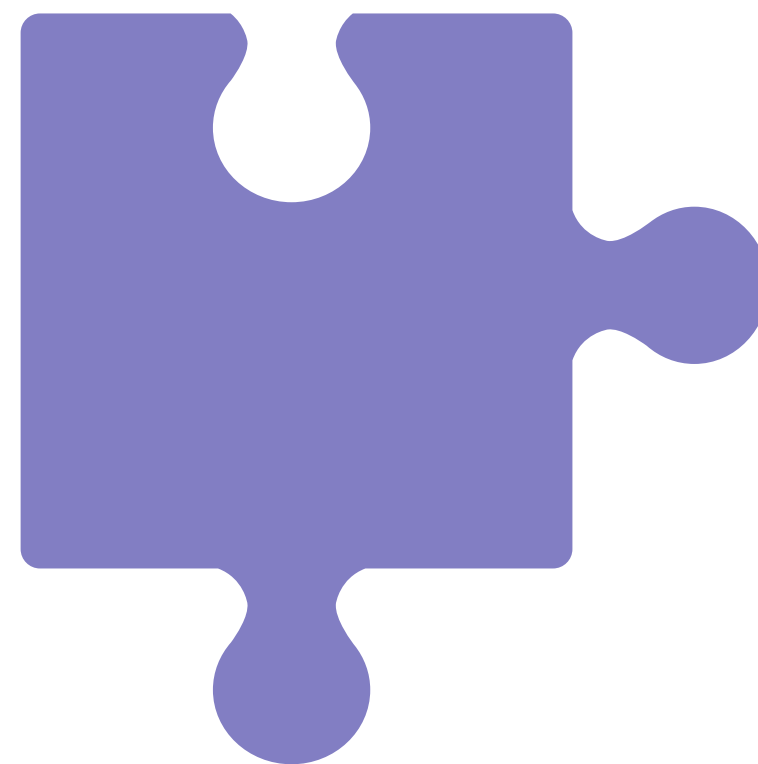
Cognition

We look at cognition and how it works



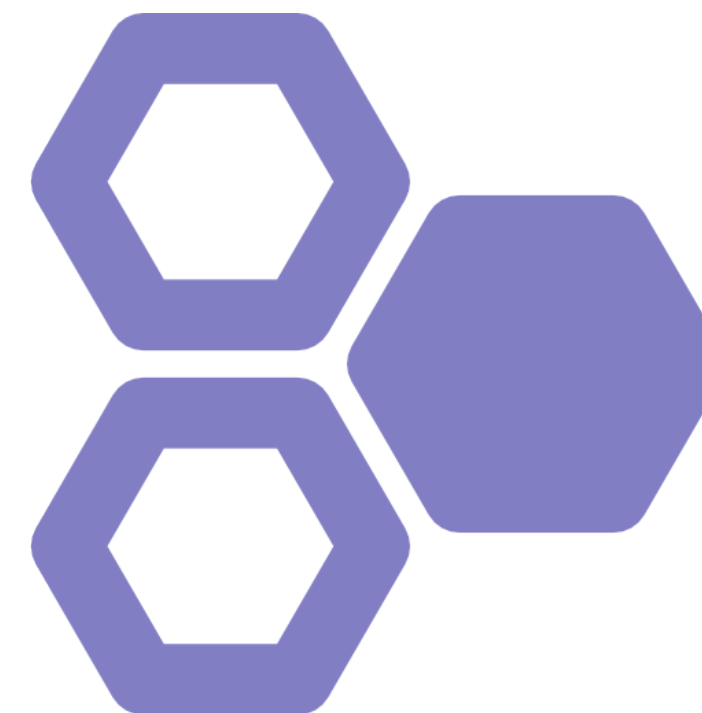
Reason

We will explore logic, reason and argumentation



Elements

Discover the Elements of Reasoning



Standards

Learn the Standards of Reasoning

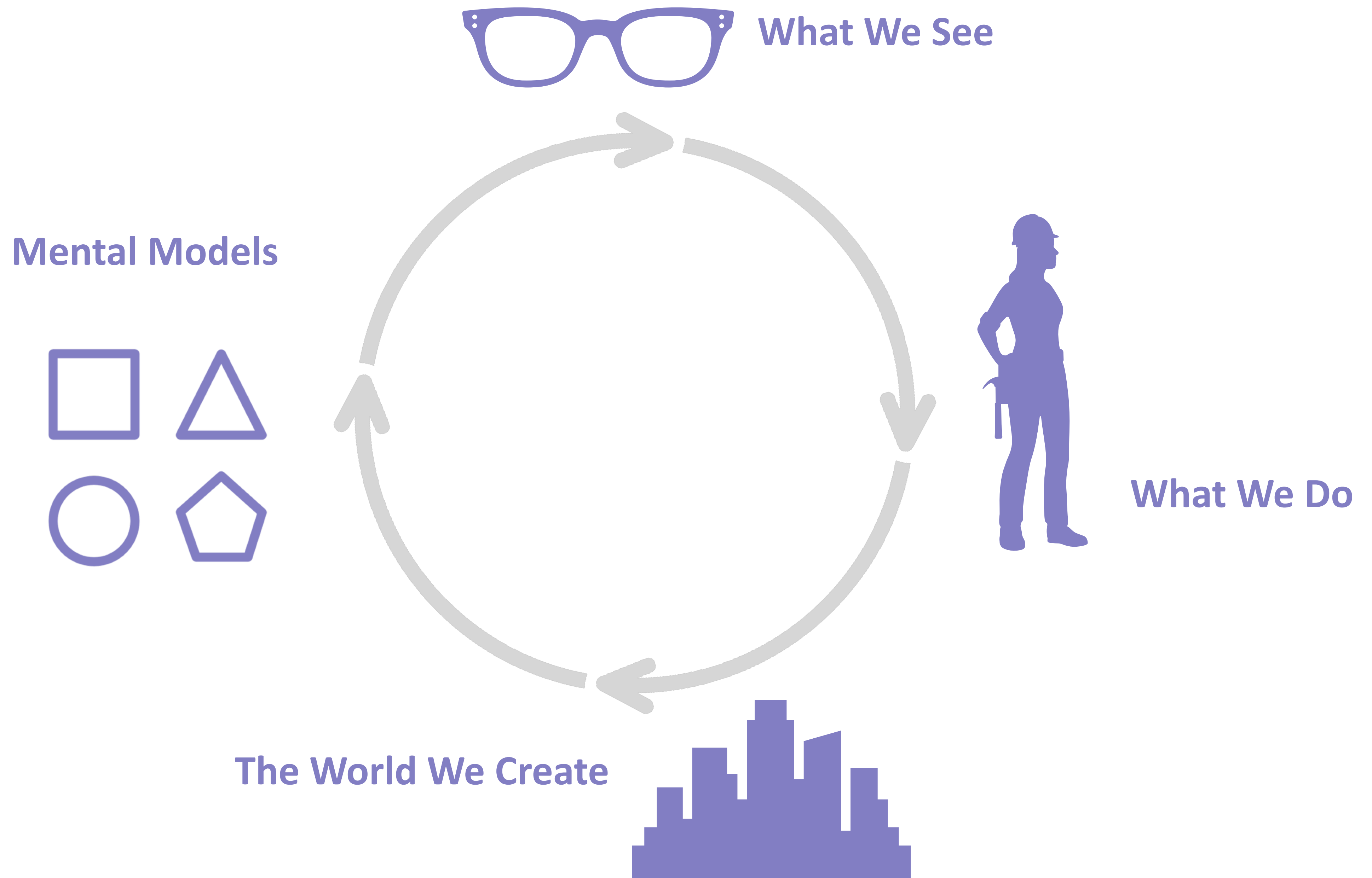


Why Critical Thinking?

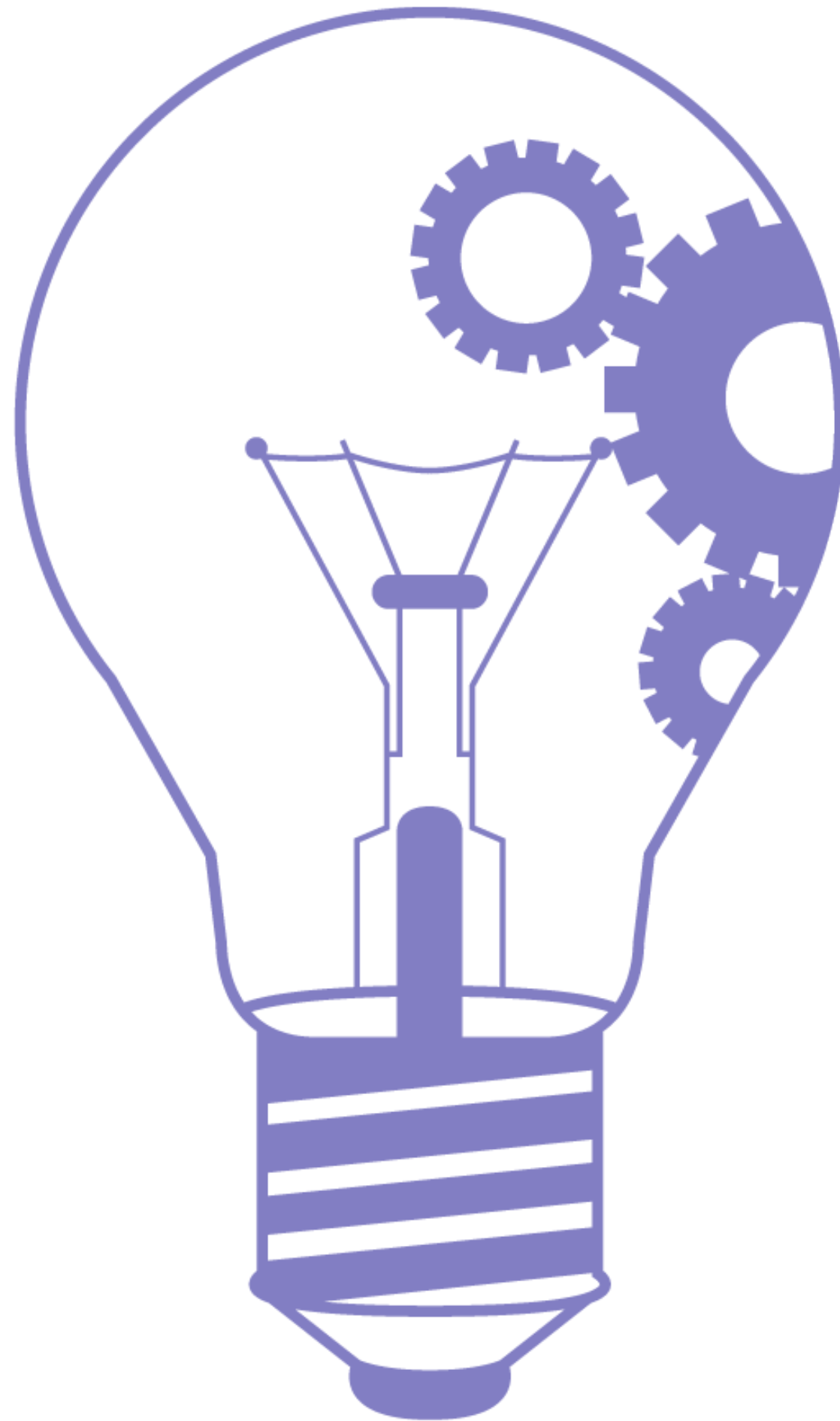
"We have met the enemy and he is us." This saying from the cartoon character Pogo captures a key aspect to systems thinking, it starts with a recognition that our thinking and world-view determine how we act which leads to the world we create around us. If we want paradigm shifting breakthroughs it will happen by changing our way of thinking and this will only happen by investing the time and energy in understanding our ways of thinking and current limitations.

If there is something systemically dysfunctional about a system we create - aka a wicked problem - then the real issue is likely not "out there" but instead a product of our ways of thinking. Thus starting from the beginning with system change means an assessment of our world view, how we look at the world, this is called reflexivity. Systems thinking starts by being reflexive about our worldview and for this assessment of our ways of thinking we can use critical thinking.





What is Critical Thinking?



Systems thinking before anything is about thinking, it is a type of thinking, thus we can never be good systems thinkers without first being good thinkers.

Constructive thinking does not come naturally to us, it requires a concerted effort to become aware of how we see the world, how we reason and how we might improve our reasoning.

We call this effort to improve the quality of our thinking, critical thinking. Critical thinking is about being reflective about our thinking, questioning our worldview, taking it apart to better understand it and to ensure a baseline of quality.

Critical thinking is a form of metacognition, it is self-directed and self-monitored; it is about developing the conceptual tools to be able to think for oneself.



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to the explainer video

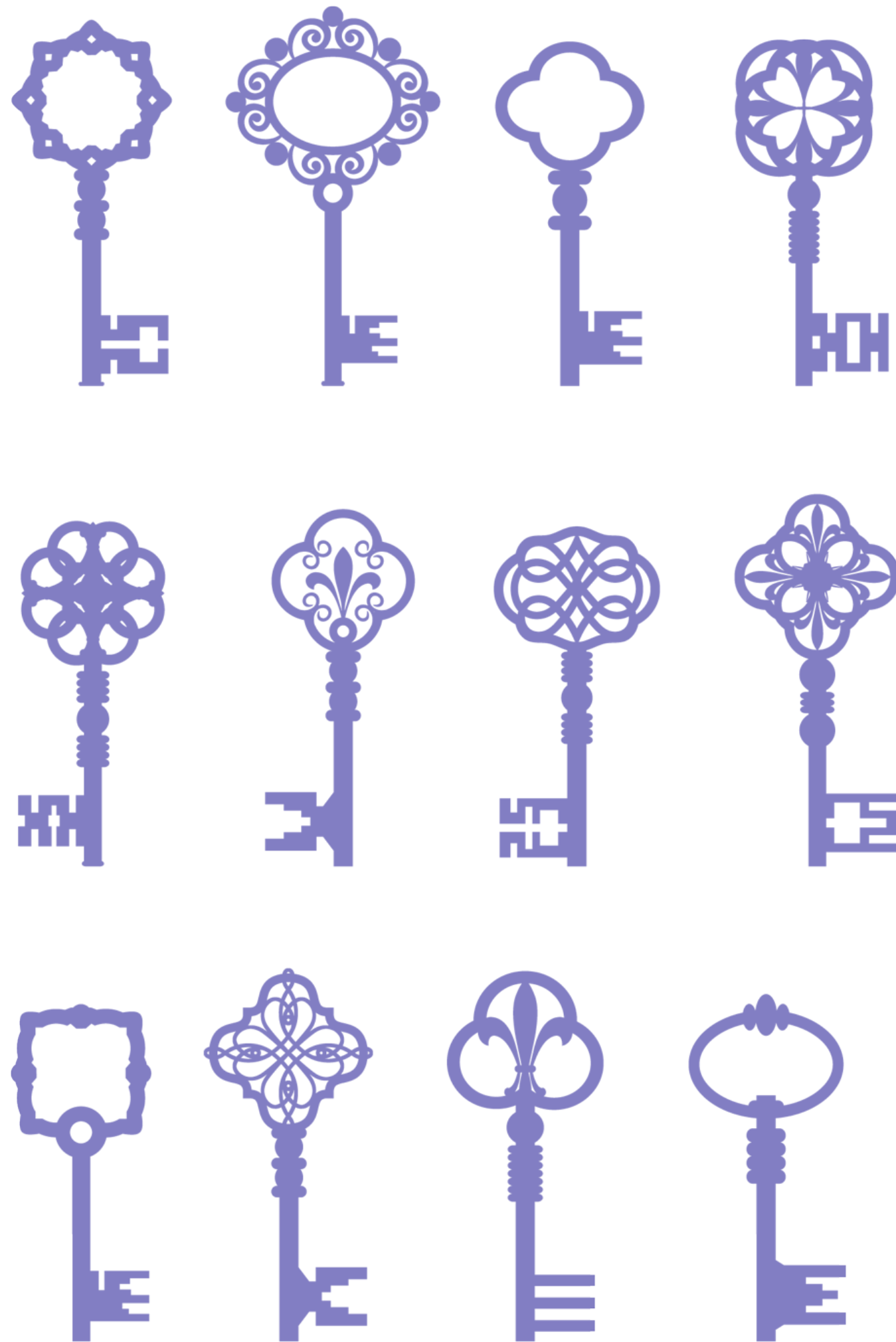
Seeing Systems

Systems thinking is about trying to improve the quality of our thinking so as to not just see parts, but instead to see systems; the systems we form part of in our world. For most adults seeing systems does not come naturally, in our every day way of being we see parts and draw a few connections that are very much centered around us and our particular place in the world. To see systems is to in some way overcome this self-centered view of the world.

This requires us to overcome some of the limitations, flaws and biases in our thinking resulting from our egoism so as to see the systems we form part of independent from ourselves. Calling oneself a systems thinker should be a commitment to an ongoing *learning process* of examining and trying to improve our thinking to become better at seeing systems. This starts with first understanding how we see the world, and the existing limitations in our reasoning.



Importance of Perspective



"A systems approach begins when first you see the world through the eyes of another." This famous quote from Charles Churchman illustrates the need for us to be able to overcome our egocentric view of the world if we wish to become systems thinkers. When we look at the world from a level one kind of thinking we just see it from our own perspective and things in relation to ourselves.

The aim is to be able to actually separate ourselves from our own point of view and start to see the world from different perspectives. When we are able to get beyond our initial level one thinking and see the world from other people's perspective then we can start to piece together a view of the broader systems in our world. Reflexivity and critical thinking are what enable us to get beyond our own perspective to start to value and include multiple perspectives and from them start to see the broader systems we form part of.

Thinking Critically

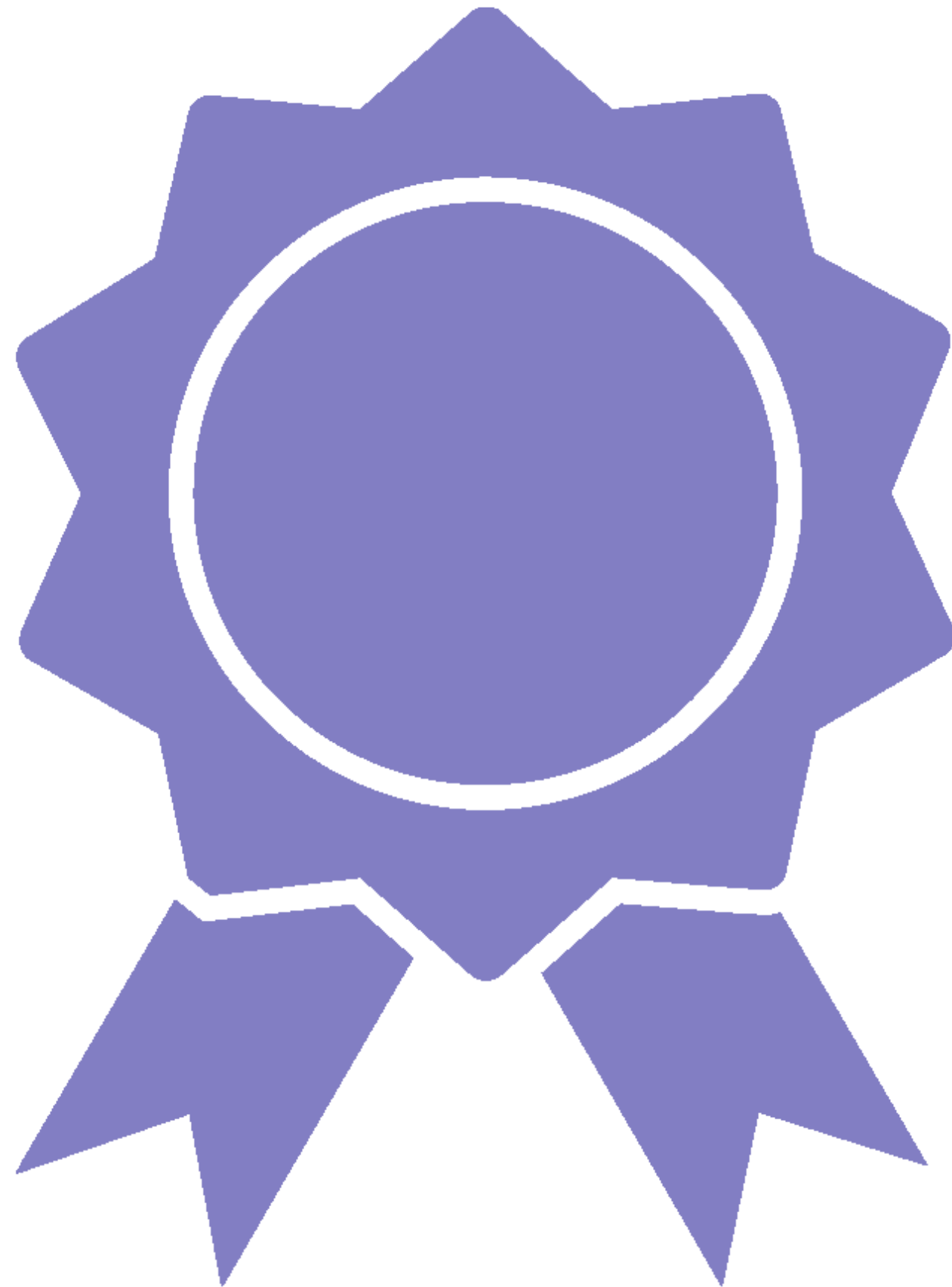
For every human being thinking comes naturally, however typically we do not think systematically and constructively. Much of our reasoning left to itself has limitations and failings. Our thinking is often biased, unfocused, distorted, partial, uninformed, unconscious and we largely accept what we have been socialized into with only limited standards of validation placed upon it.

Like achieving high standards in any other area - such as being a great athlete or physicist - the effective use of reasoning has to be learned cultivated and practiced and this is done through the application of standards to our thinking.

Metacognition is the activity of examining the processes by which we think about and arrive at our own beliefs. It involves analysis of one's cognitive process and adjusting them according to meta-standards. The aim is to try and improve the clarity, accuracy, relevance, depth, breadth and logical consistency of our thinking.

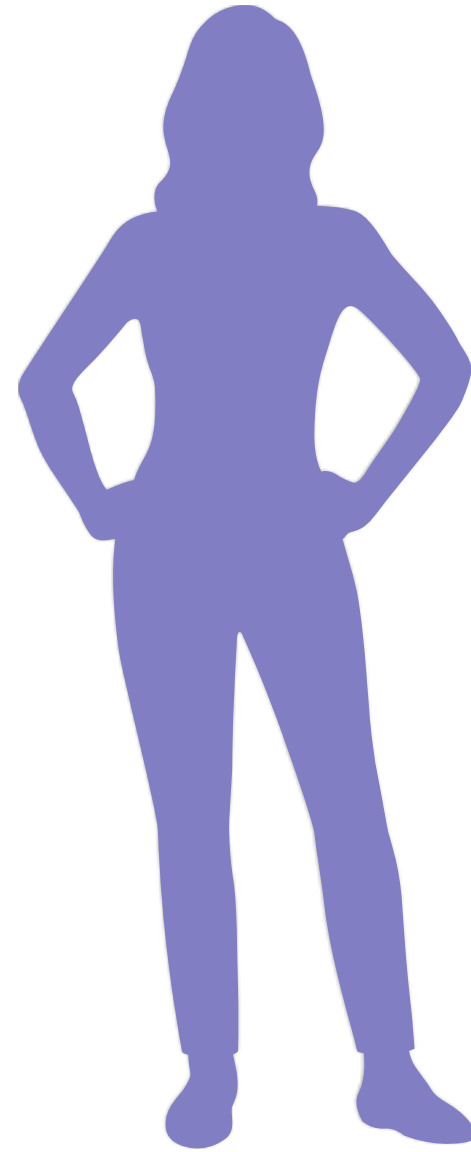


Thinking Quality



It is the nature of the mind to create thoughts, though the quality of that creation varies enormously from person to person. Achievement of quality requires standards of quality. Systematic thinking involves doing the work necessary to research and understand things for oneself, instead of giving the responsibility to another.

We are thinking systematically or critically when we rely on reason; require evidence; ignore no known evidence; follow evidence wherever it leads; are concerned more with finding the best explanation than being right; analyze apparent contradictions in our reasoning; ask questions and seek knowledge that is valid within many frames of reference, not just one.



Personal Characteristics

Acceptance of Diverse Viewpoints
Desire to be Well Informed
Open and Fair-mindedness
Reflective Skepticism
Inquisitiveness
Seek Reason



Cognitive Skills

Understand the Links Between Ideas
Determine Relevance of Ideas
Understanding Logic
Able to Build Arguments
Able to Appraise Arguments
Reflect on Justifications
Understand Context



Capacity to Apply

Willingness to Alter Behavior
Flexible & Adaptive
Act According to Reason
Systematic in Approach
Context Sensitivity



Cognition

Cognition Overview

All the thinking we will ever do in our lives will be dependent upon our cognitive capacities, thus it is important to understand the basic workings of cognition; to understand the basic biological and evolutionary constraints placed on us when it comes to thinking creatively.

The first thing to note is that although consciousness may be much more than its biological substrate it is still constrained by it and strongly conditioned by it. Thus by understanding this basic biological and evolutionary condition we can understand something about the overall structure and processes of our reasoning.

Here we will talk about how the brain works, look at some of the central insights from cognitive science and talk about some of the many limitations and flaws prevalent within human cognition.



Cognitive Science



A revolution has happened in cognitive science over the past few decades and one thing that psychologists and cognitive scientists will be quick to point out is that what we perceive as reality is really an illusion constructed by our brains. Much of our experience of reality we take for granted and believe it is just the way it is, however, everything, every little part of our experience of reality has to be constructed by the brain.

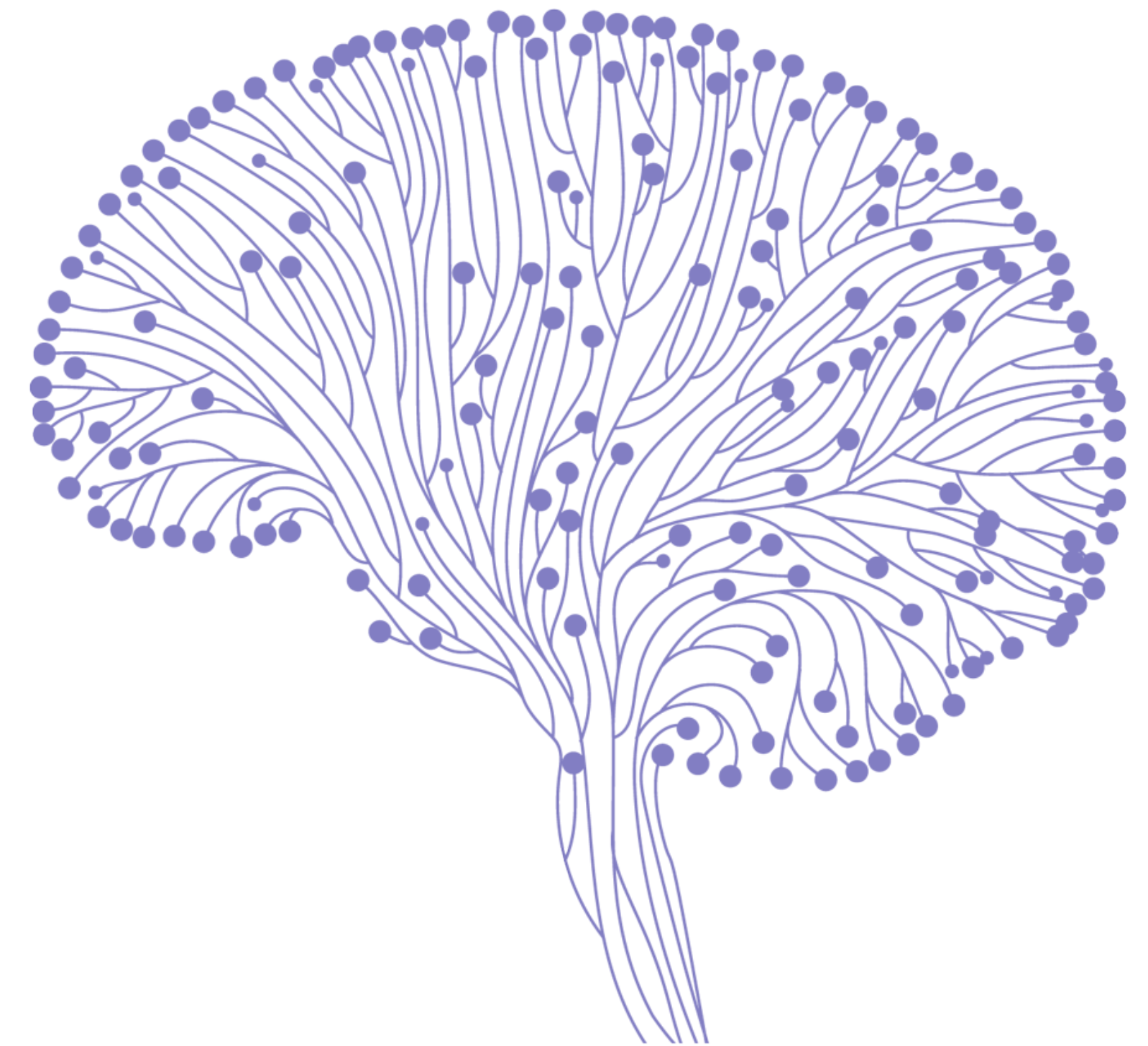
Our normal mode of thinking tends to lead us to the assumption that the world is just out there and that we just see it "normally" and that is all there is to it. In fact the complete opposite is true, reality is constructed by our brains based upon many assumptions. To be a critical thinker is to first understand how reality is constructed by our brains, and the basic workings of cognition.



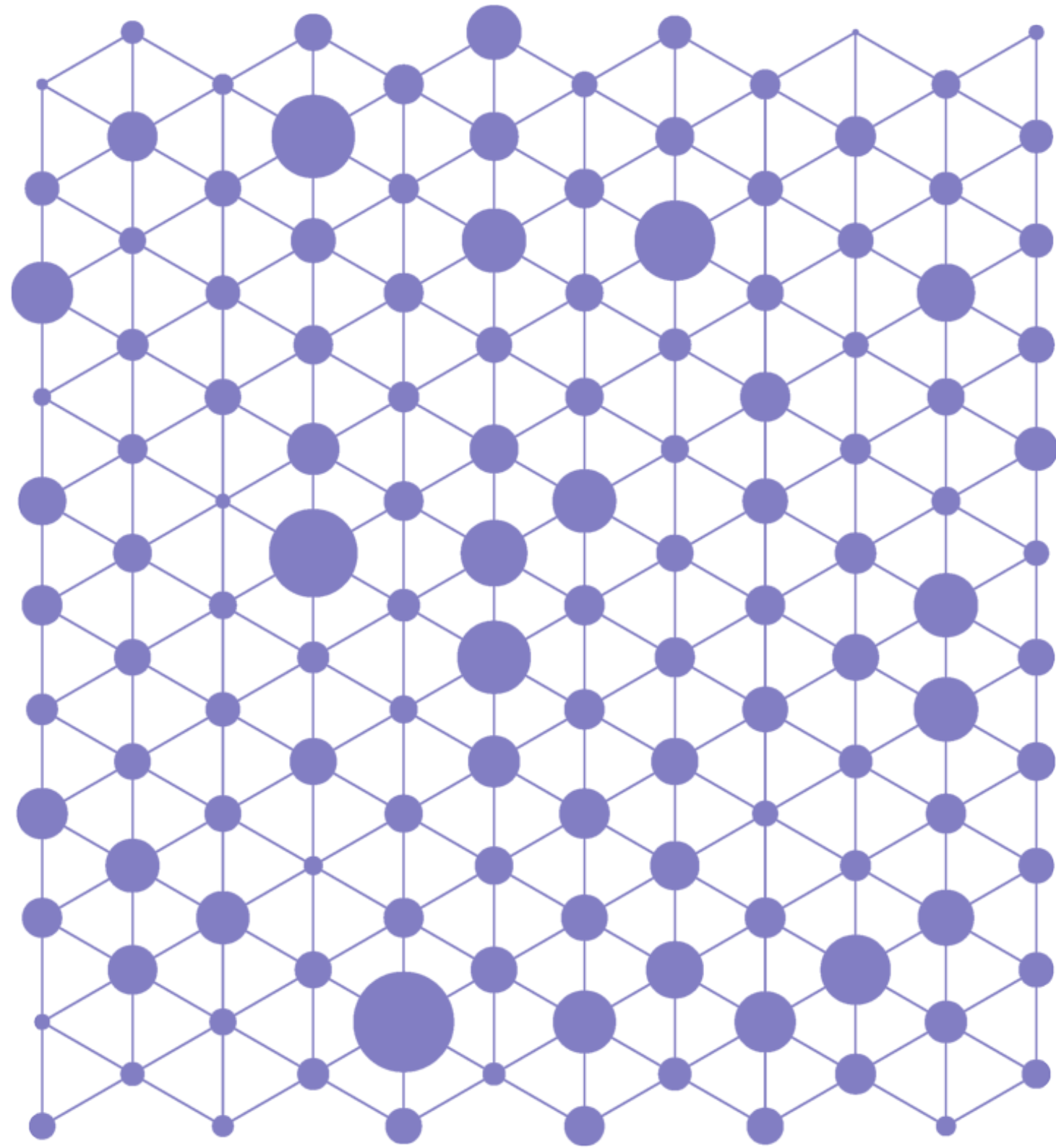
Cognition

Cognition is the mental action or process of acquiring knowledge and understanding through thought and experience. The term cognition refers to a diverse collection of psychological activities, and encompasses processes such as, attention, comprehension, memory, judgment, evaluation, reasoning, decision making, problem solving, and the use of language, among others. Cognition within humans may be concrete or abstract, conscious or unconscious, as well as intuitive or conceptual.

The mind is a composite of approximately one hundred billion neurons connected together into a neural networks. Neural networks are made of neurons and connections between them called axons, which have synapses where the different neurons meet. The brain is physically built as a neural network and cognition happens in patterns with every pattern corresponding to an idea or memory. These patterns are memories or concepts that one can use for cognition.



It's all About Patterns



The brain is hardwired to discern patterns. Humans have a well-documented tendency for pattern recognition. Brain processing is based largely on processes of pattern recognition which matches the underlying biological structure of the brain as a massive parallel processor with many connecting neural networks. One of the advantages of this is our innate strength at making connections between different ideas, visual patterns, words, events, objects , etc.

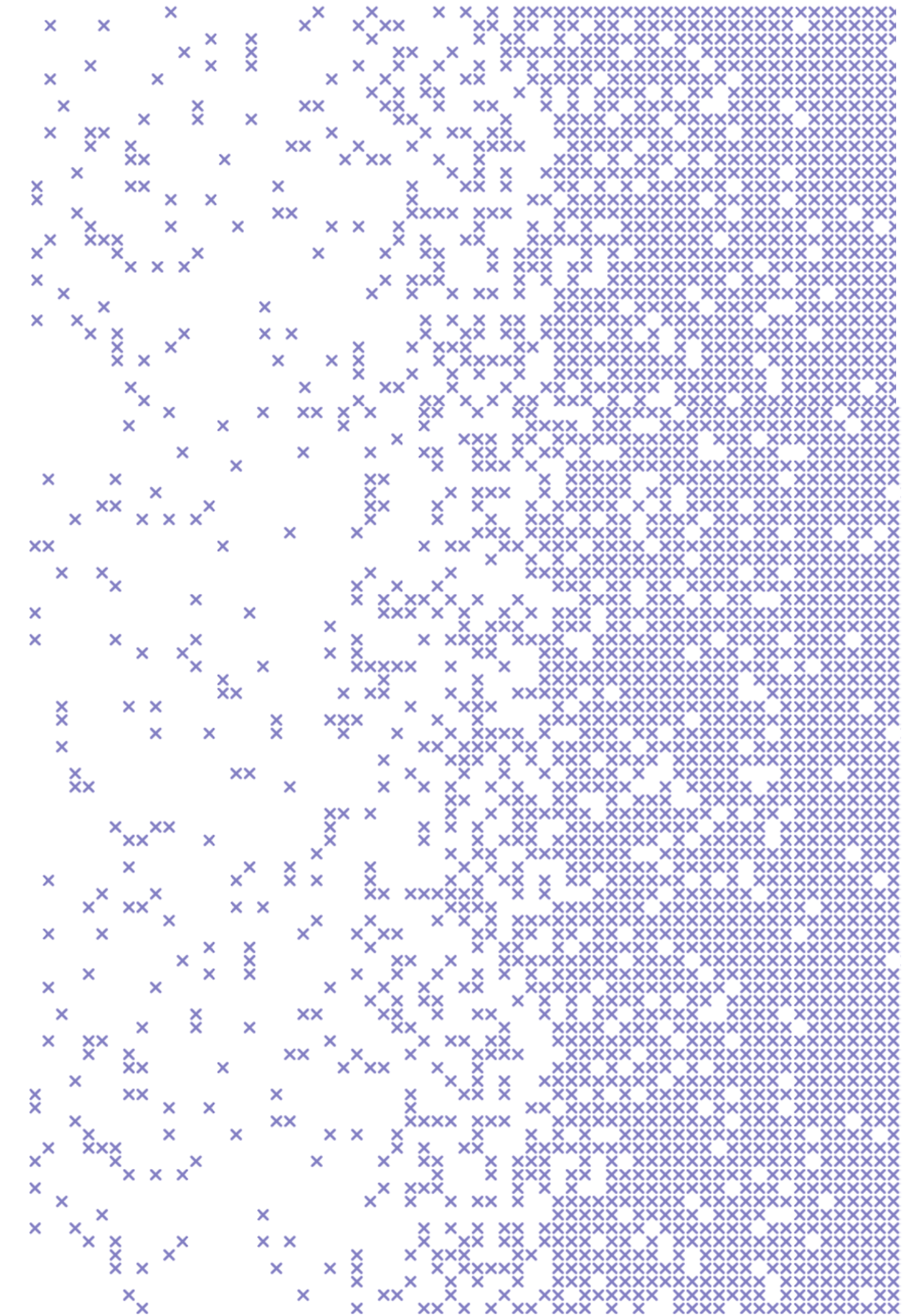
We identify and learn about new things in relation to preexisting patterns within our conscious. This means one can only learn something new, or understand something if one can associate it with something already known. If we want to communicate with someone we have to accommodate the fact that what we say has to be associated with something they already know for it to be effectively interpreted, hence the power of metaphor.

Abstraction

The mind is a hierarchically layered, network structure, with this hierarchy being based on abstraction i.e. more basic patterns on the lower levels are used as the building blocks for higher, more abstract patterns. In the development of the brain more basic patterns are formed and then grouped to create higher-level composite patterns.

The lowest level of abstraction is connected directly to our senses providing the data or "facts" that are inputted. We then build up higher level patterns through a process of abstraction and synthesis; abstracting away from specific instances in synthesizing them into more generic forms.

In an evolutionary sense, our biological brains are a lizard brain, inside of a mammal brain, inside of a primate brain, inside of a human brain, which is the most recently evolved part of our brain, the neocortex.



Subconscious



Much of our cognition takes place subconsciously in the more basic parts of our brain; where the emotions take place. Emotions make quick decisions for us that are mainly adaptive providing us with very direct behavioral motivation which is faster and easier than reasoning through everything we encounter.

Our decisions seem to be conscious, but they are often made subconsciously by an evolutionary neurobiological calculus that we are not aware of. Emotions are subconscious and involuntary. We do not choose to feel fear; we just feel fear and then invent a reason to explain why we feel it, with varying degrees of correspondence between the emotional cause and the rationalization.

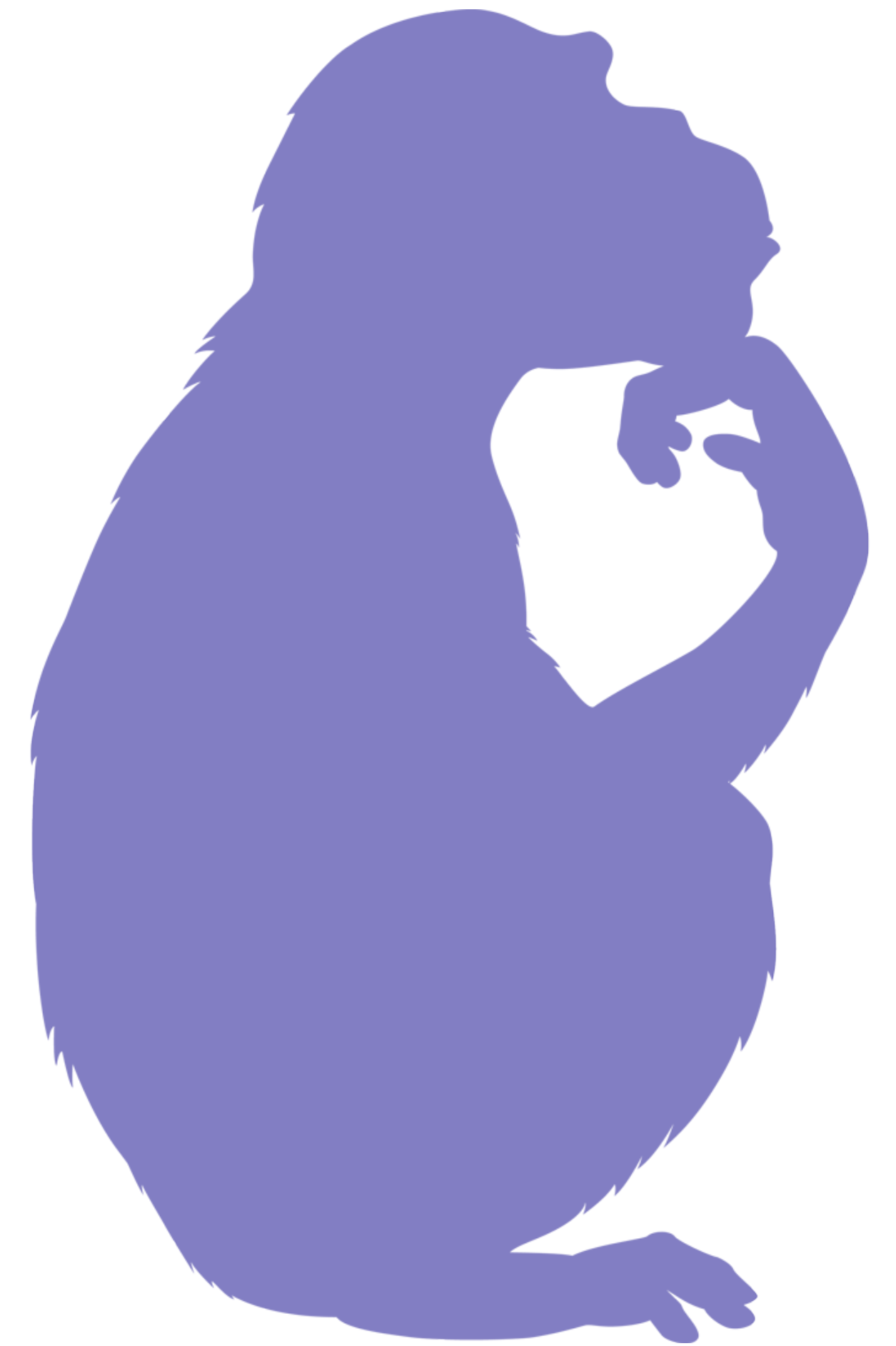
In addition to decision-making intuition is a form of subconscious processing. For example, emotional processing social cues and the monitoring of our internal state are largely subconscious processes.

Evolutionary Psychology

The human brain is composed of evolved computational systems formed through natural and social selection to use information to adaptively regulate social and physical behavior. In this respect cognition can be understood as the product of a set of evolved psychological adaptations to perennial challenges in our historical social and natural environment.

The different parts of the brain often create much tension as the different brain regions attempt to fulfill their own function and purpose. The conflicts between the different parts creates cognitive dissonance which is the holding of two or more beliefs or ideas that are manifestly contradictory.

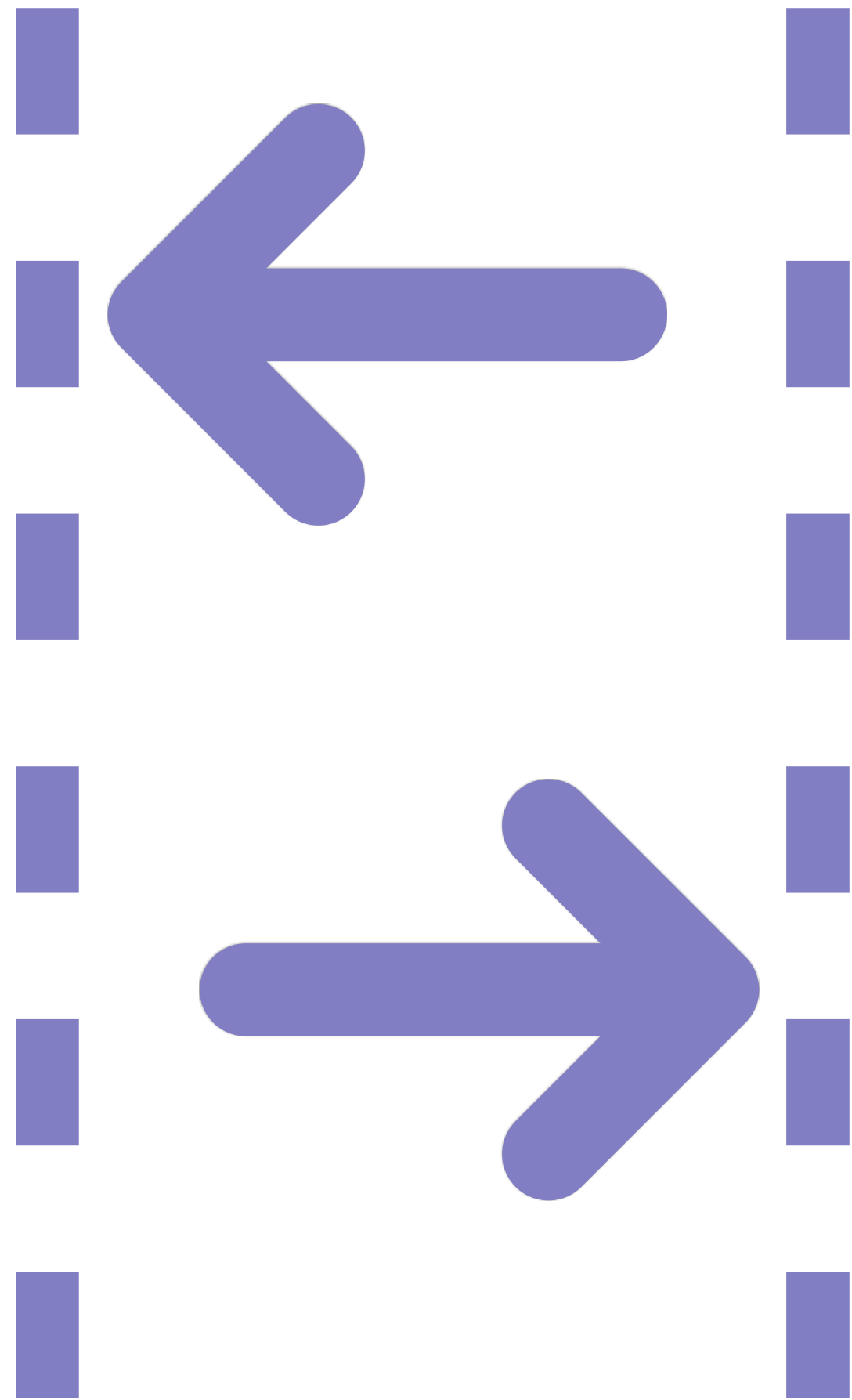
We do not like cognitive dissonance and thus are motivated to resolve this, once resolved our brain gives us a small amount of dopamine which is a reward neurotransmitter that makes us feel good. This is most explicit in the relationship between the more advanced neocortex, that has executive functions, and the more primitive parts through which we experience direct emotions and instincts.



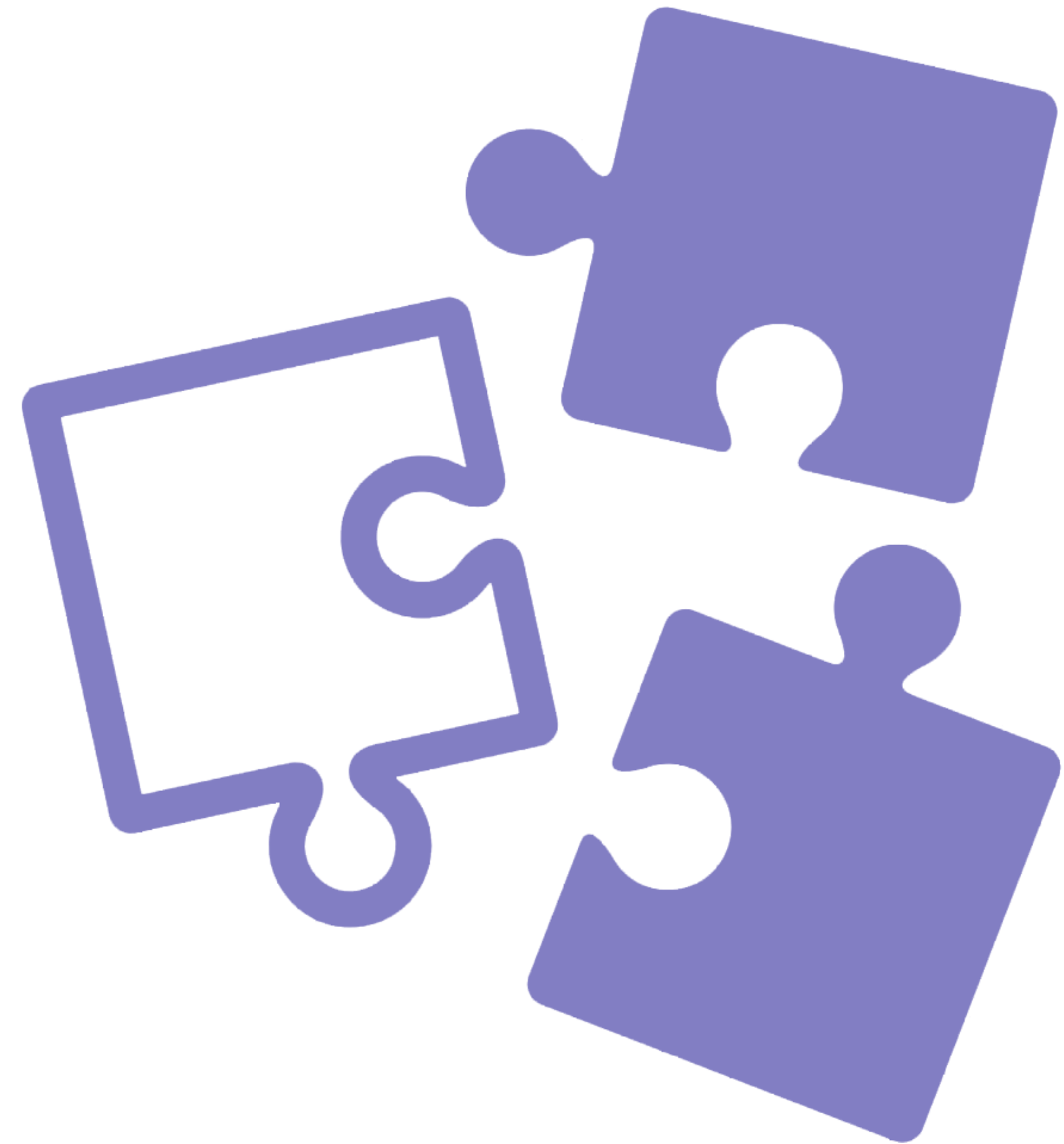
Limitations

Our ego creates a lot of illusions about ourselves; that we are awake, that we are responsive, active, and consciously making decisions when in fact we are typically on autopilot. This is because doing what we already know is much less energy consumptive than dealing with something new, thus we mainly operate on automatic mode trying to put things into what we already know so as to conserve time and energy — unless it is absolutely necessary.

In our everyday lives we are overwhelmed by sensory information, thus we only pay attention to a very small subset of this which we manufacture in to a complete account by adding lots of assumptions; we create a complete story by adding constructed pieces as needed. Not only are the components of what we perceive constructed but also how we put our memories and perceptions together in a meaningful way is also constructed. Recognizing these foundational fallibilities in human cognition is the first step towards becoming a critical thinker.



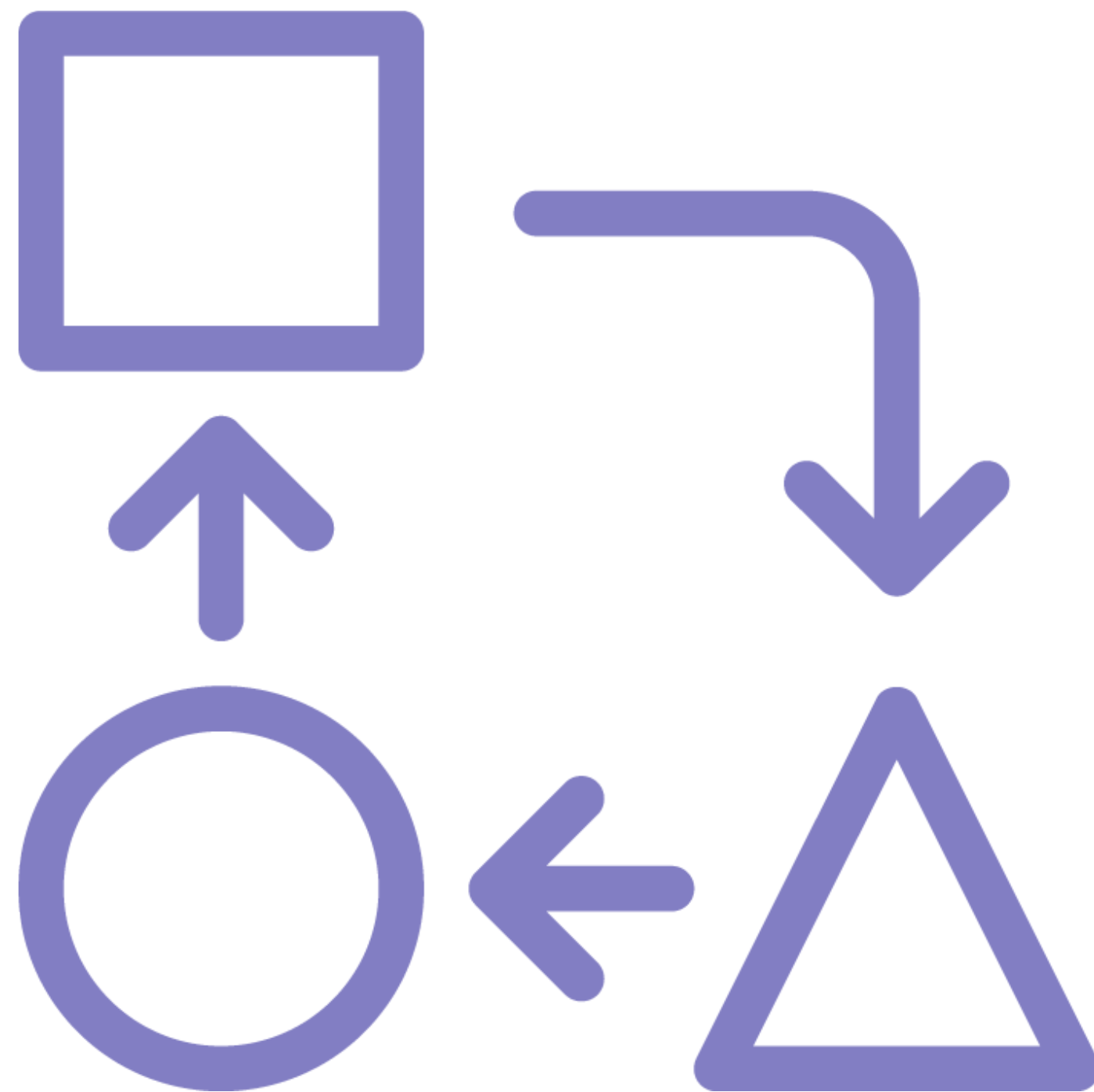
Logic & Reason



What is Logic?

Logic defines thinking according to a set of consistent and coherent rules and the domain of philosophy that studies these principles of correct reasoning. In a more general sense, logic is any integrated and ordered set of interrelationships between entities that is intelligible. For example, we can say there is a certain logic to the way a washing machine works.

In this respect, logic is the system or set of principles underlying the arrangement and behavior of elements in a system. All ordered systems have a set of relationships between their parts that defines the whole system and how its parts behave. This set of interrelationships that defines the parts is the logic of the system. For example, there is a logic to the way a farm works because a farm is governed by the many things that it is interconnected with, the soil, plants, water, the machinery, customers, suppliers, local economy, etc.



Systematic Thinking

Systems thinking is a systematic way of thinking that is based upon the premise that through a careful and holistic inquiry we can derive the order to things; that there is a logic to the way the world works and we are trying to understand this.

To understand this objective knowledge requires that our subjective conceptions are shaped by the external logic of the system we are considering - not the other way round. This has been achieved in the case of science through the application of objective standards and methods.

This highlights a central part of what critical thinking is about, it's about developing standards for our thinking so that we can start to think systematically, reason effectively and thus derive the logic inherent in the systems around us.

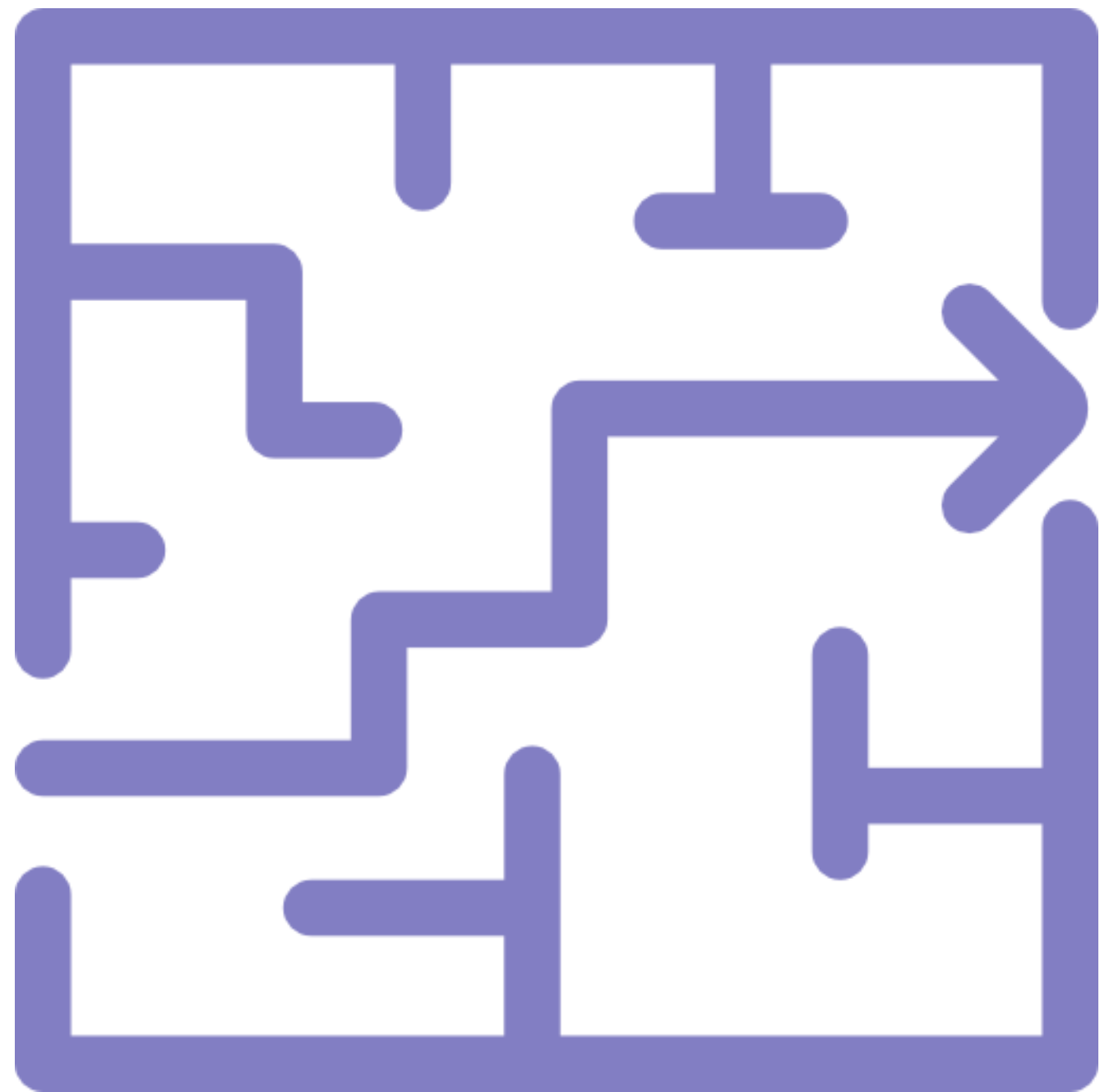


What is Reason?

Whereas logic refers simply to the instructions and interrelationships between things, reasoning refers to the full process we go through in amassing information, assessing it, interpreting it, integrating it and the general process of generating knowledge based upon logical rules.

Reason is the capacity to think, understand and form judgments through a process of inference that is guided by some form of logic. It is one of the ways by which thinking leads from one idea to a related idea and generates knowledge that is based upon a coherent set of rules.

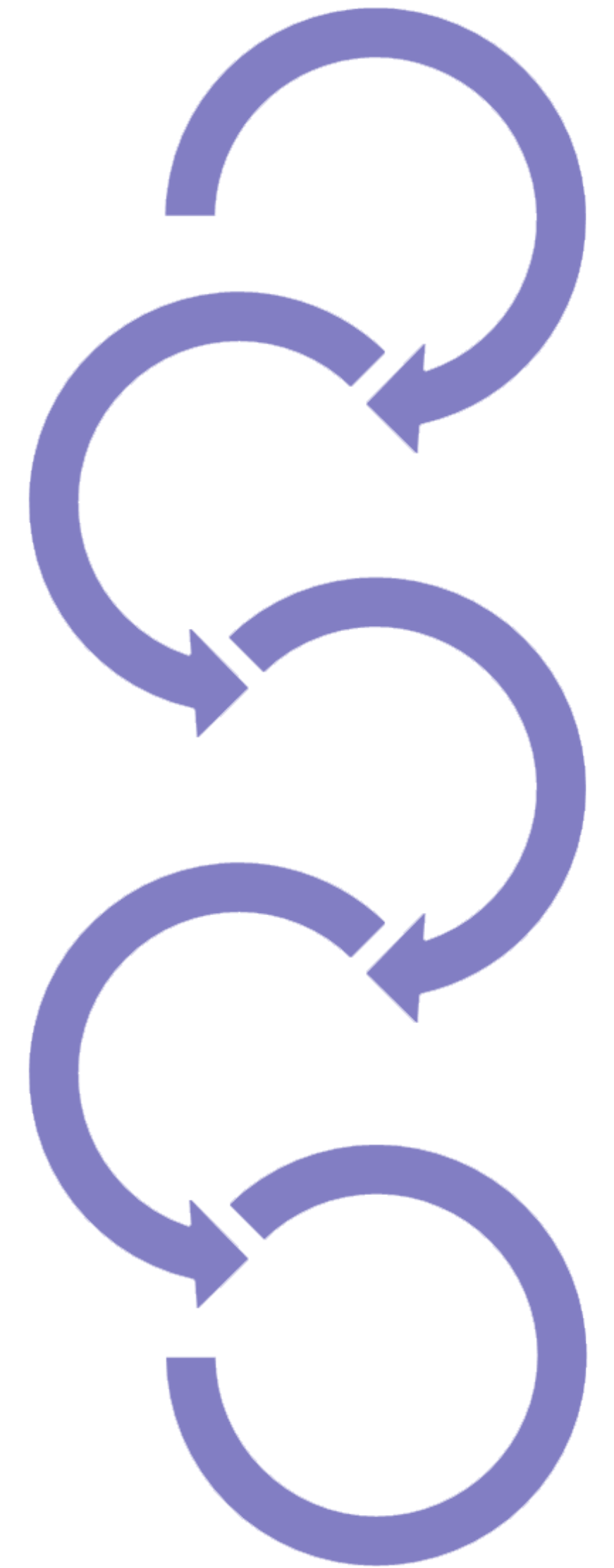
Reasoning, as opposed to other forms of thinking, is based upon a coherent set of objective rules that govern the processing of information or ideas. Thus reasoning can be contrasted with cognitive processes governed by a subjective set of rules which are based upon or influenced by personal feelings, tastes or opinions. Subjective rules are dependent upon the specific experience of the subject.



Reason is a Process?

To think and reason is to be on an open-ended journey, where anything is open to question, proven or disproven and if it is disproven it should be let go. Reasoning involves a methodological inquiry, that is to say, it involves some kind of algorithmic process whereby the end product is generated. This process can then be demonstrated and questioned by others. With reason, a claim is understood to be justified as true or authoritative based upon the process or method that created it - not the characteristics of the person or the number of people that believe it to be true.

Thus reason displaces our subjective intuition of ourselves as being at the center of the world and replaces it with some set of objective rules. We displace the subject as the central point of reference and in so doing become part of a larger system of organization. This is most clearly illustrated with the Copernican revolution at the beginning of the modern era which through observation rather than dogma displaced humans and planet Earth from the center of the universe through careful and systematic observation of the solar system.



Subjectivity & Objectivity

It is important to be aware of the difference between subjective and objective statements. Subjective statements are statements of opinion, taste, and perspective, they are relative to a particular person or context, while objective statements are not, they are more like facts and can be generalized. Neither is good or bad, both opinions and facts are needed, but what is important is that we can notice the difference between them so as to not confuse our opinion with fact - this is where errors lie.

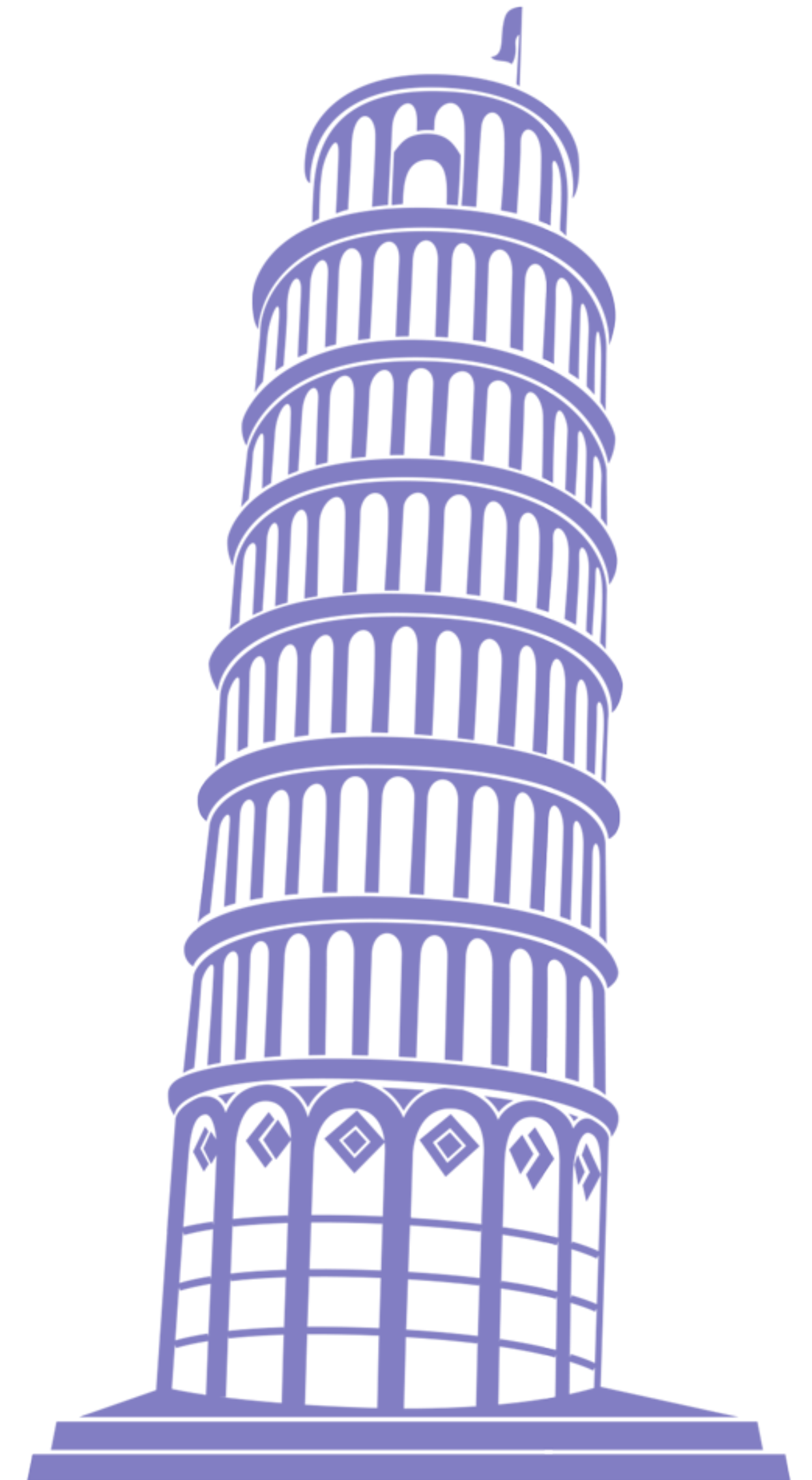
Objective reasoning means reasoning according to a set of logical and objective standards, while subjective thinking refers to reasoning without these standards, it is instead the product of our own experience. Our opinion and perspective is only valuable if we can recognize it as such. If we try to turn it into an objective and generalizable fact this will not help as it results in excluding all other opinions.



Balanced Inquiry

Reasoning should be a balanced process of inquiry; it should be open-ended. We should not know the answer before starting, thus it involves a degree of openness to uncertainty. Objective thinking implies an impartial, open and balanced inquiry; the result should express reality without our subjective modification of it. When the individual does not conduct a balanced inquiry but influences it towards a certain outcome in their interest we call this 'motivated reasoning'.

Motivated reasoning is reasoning based upon subjective motives that condition the cognitive processes of the individual towards generating conclusions that endorse the maintenance or attainment of the individual's particular motives. As such motivated reasoning is characterized by rationalization, a phenomenon where the outcome to the process of reasoning is predetermined and reasoning is used as a means to give conceptual validation to the predetermined outcome; which is the inverse of the proper process of reasoning.

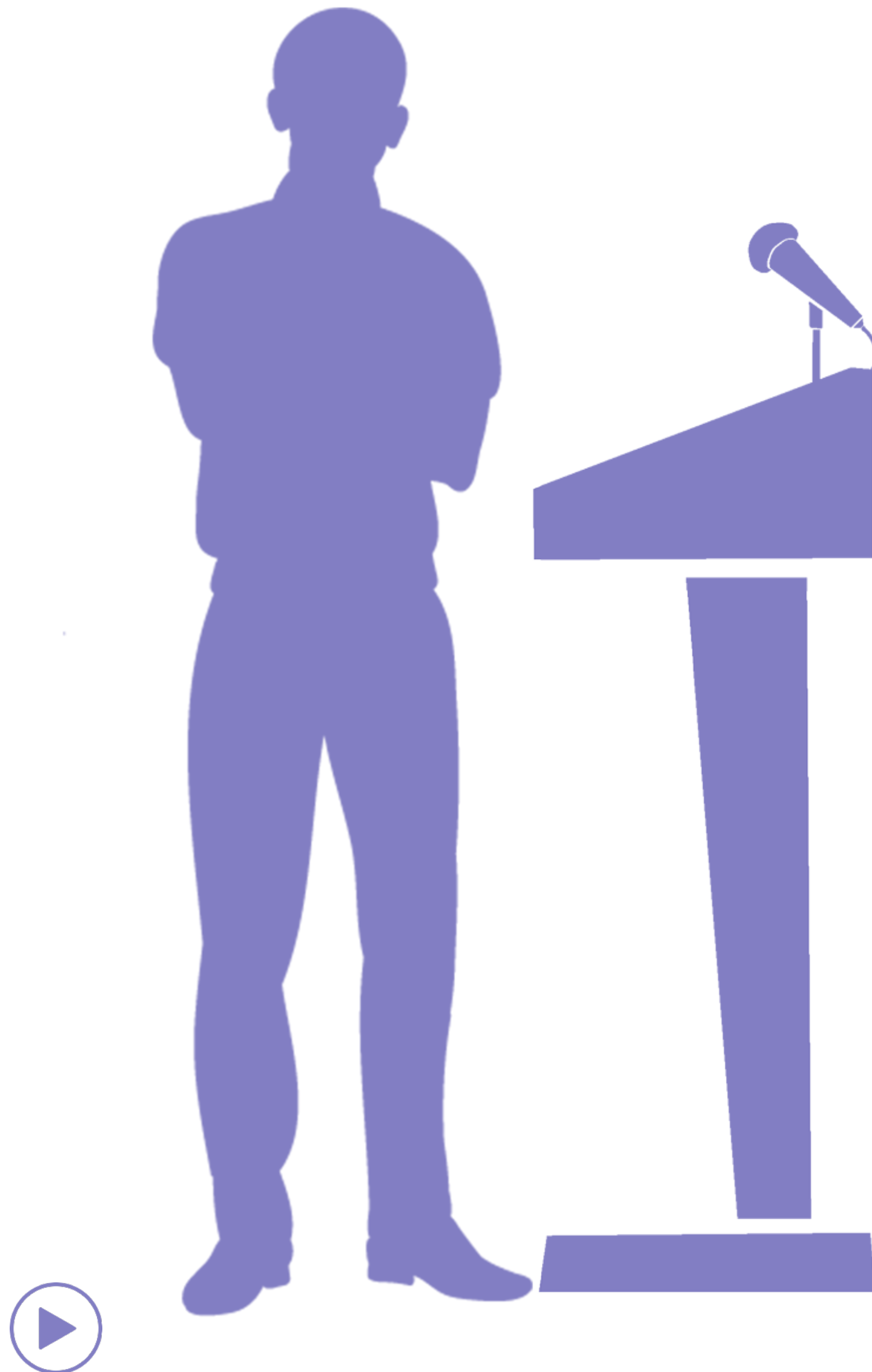


Argumentation

In order to gain greater insight that is relevant within a broader environment, it is necessary to bring disparate ideas, opinions, or perspectives together and in some way resolve their contradictions to reach a deeper understanding; the process of doing this is called argumentation.

An argument is a process whereby divergent ideas or opinions are brought into contact and interact with the intent of inferring a conclusive single global outcome. Arguments can take two basic forms, fights or debates, depending on whether they're based on force or a process of reasoning.

Fighting is a form of argumentation that involves the use of force. The use of force can remove all opposition to some kind of subjective concept or opinion, however, this will only temporarily resolve the issue, it has not been overcome by creating a synthesis, which requires instead a reason-based debate.



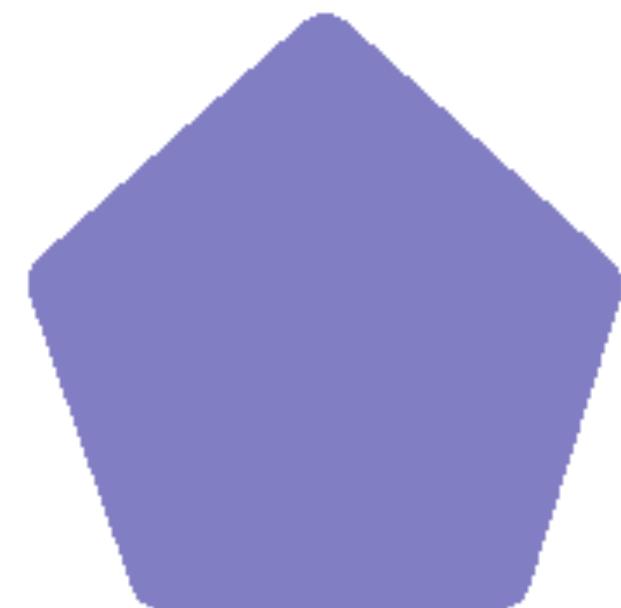
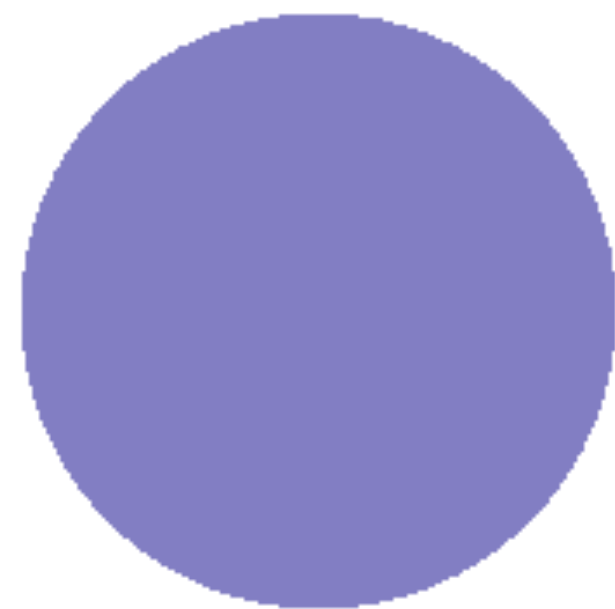
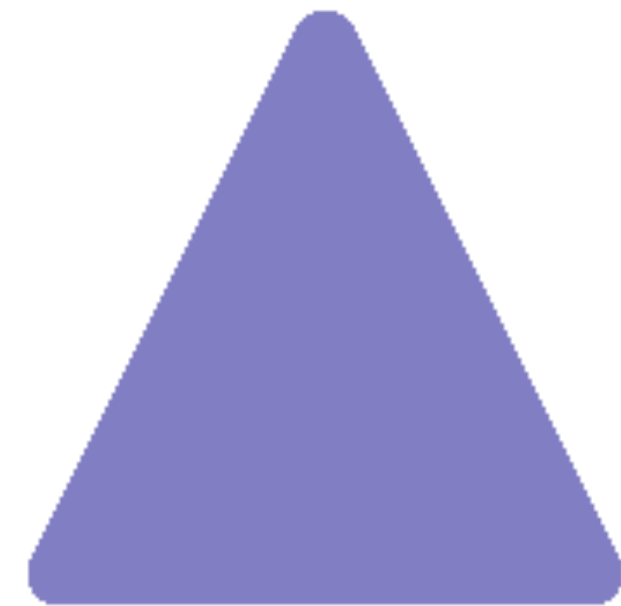
Debates

Debates expose our opinions to a process for finding common ground and consensus without resorting to violence. Debates involve members with divergent opinions or perspectives communicating reasons for their opinion with the aim of persuading others that an action or idea is valid.

A rational argument is a combination of evidence, logic, dialectic, and rhetoric. Arguments involve logic to connect evidence given to the claims being made through inference. Rational arguments are a dialectic exchange in that arguments are conducted between people with different opinions who exchange ideas in a process of discovering and testing knowledge through questions and answers. Arguments contain elements of rhetoric as they involve the development and communication of knowledge between speakers and listeners.

Arguments derived from reason are defeasible, meaning the holder is prepared to change their conclusion in light of new evidence supporting a counter-argument.





Elements of Reasoning



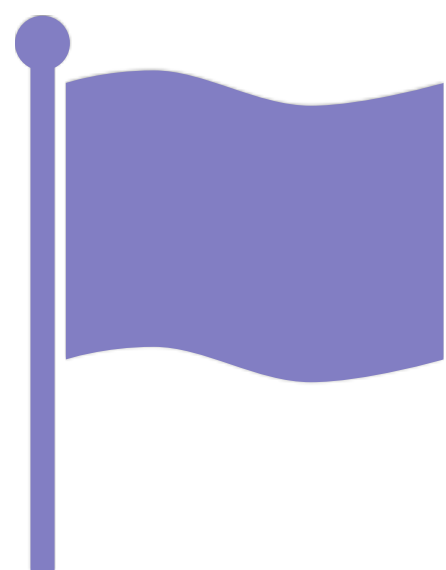
Overview

The Elements of Reasoning are a list of factors that are designed to make people aware of the different factors involved in the process of reasoning. The Elements of Reasoning framework is developed by the Foundation for Critical Thinking. Within this framework reasoning is understood as a process where people use data, information and assumptions to infer conclusions from a perspective, in attempting to answer a question or solve a problem, with consequences then resulting from the conclusions drawn.

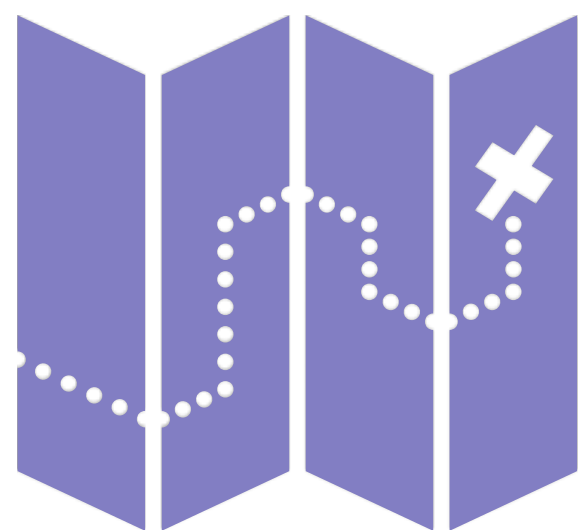


Elements of Reasoning

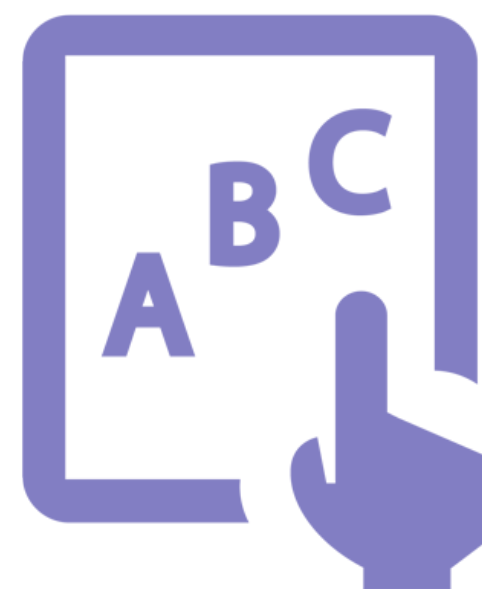
Purpose



Problem Solving



Assumptions



Point of View



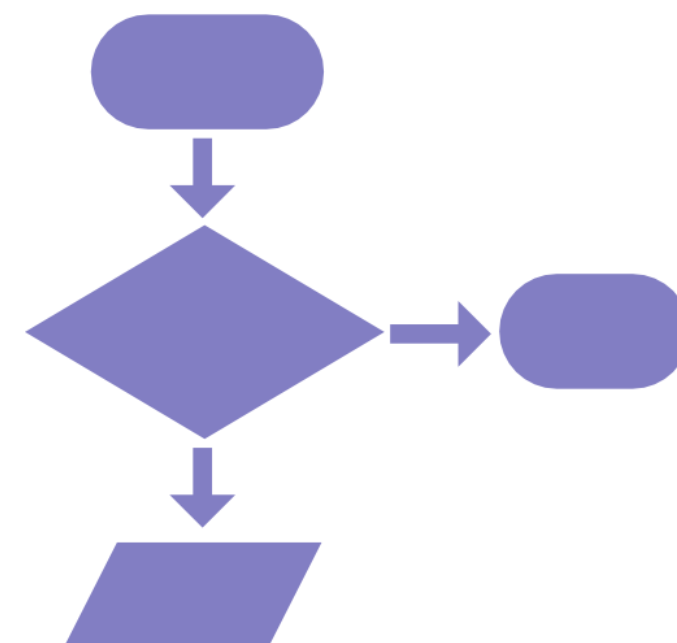
Information



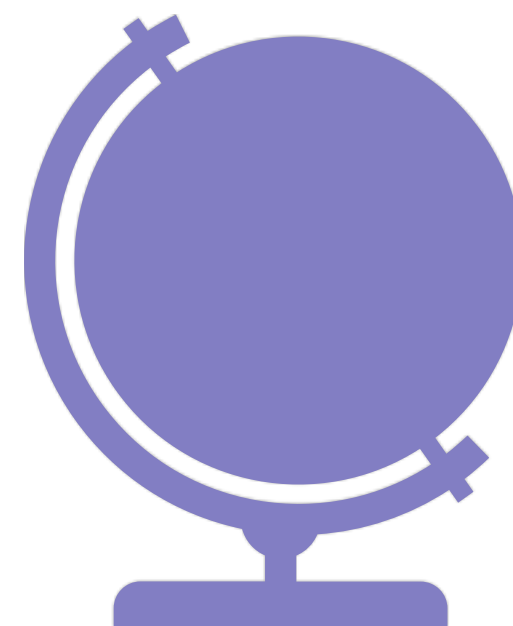
Concepts



Inference



Implications

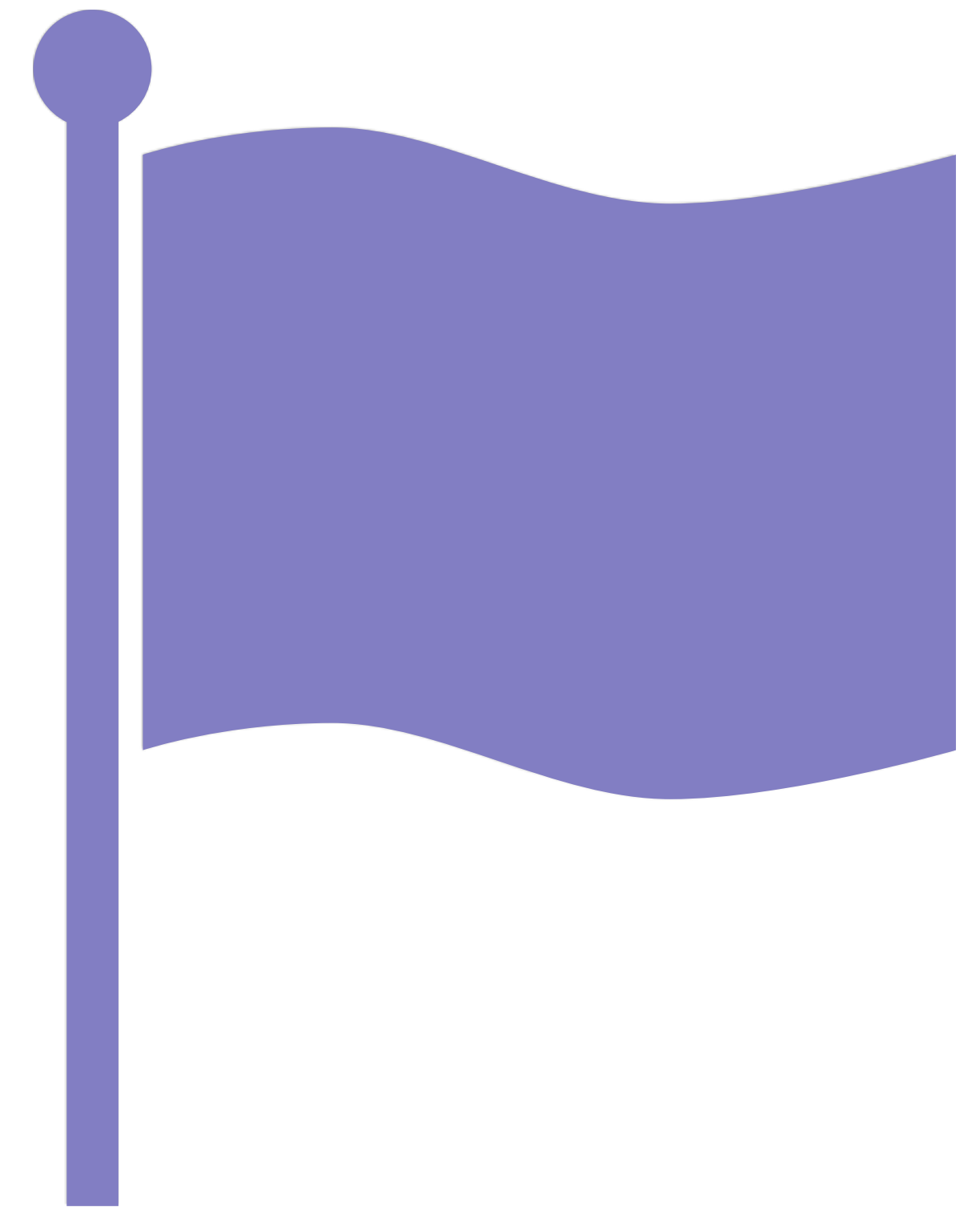


Purpose

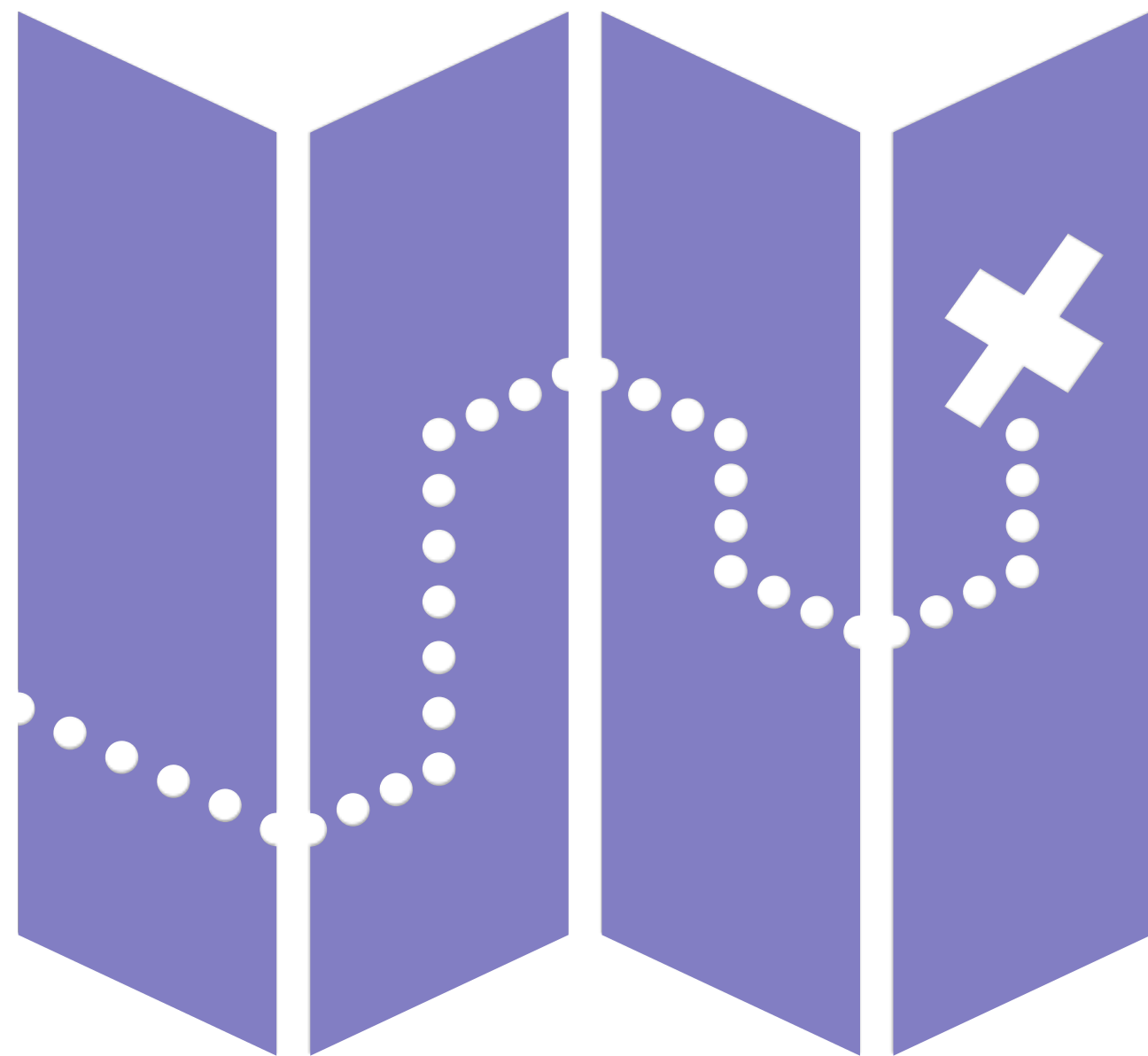
Reasoning is purposeful in nature, a concerted activity that requires a degree of effort. A central part of reasoning is a deliberate effort to construct inferences to reach justifiable conclusions. This differs from other cognitive activities such as daydreaming in which the mind operates without focus on achieving some result.

Because it is goal-oriented it is something that can be done with varying degrees of success. One may or may not succeed in the given purpose of solving a problem, understanding something, forming a plan, proving one's case, etc.

In this respect effective reasoning involves; choosing significant and realistic purposes; taking time to state one's purpose clearly; distinguishing the given purpose from related purposes; checking periodically to be sure one's activities are still aligned with the overall purpose of the reasoning process.



Solving Problems



Everyone thinks, almost all of the time, however, reasoning is a particular kind of mental activity that is focused in some way on solving a problem; planning an action, studying for an exam, defending a position on a controversial issue, etc.

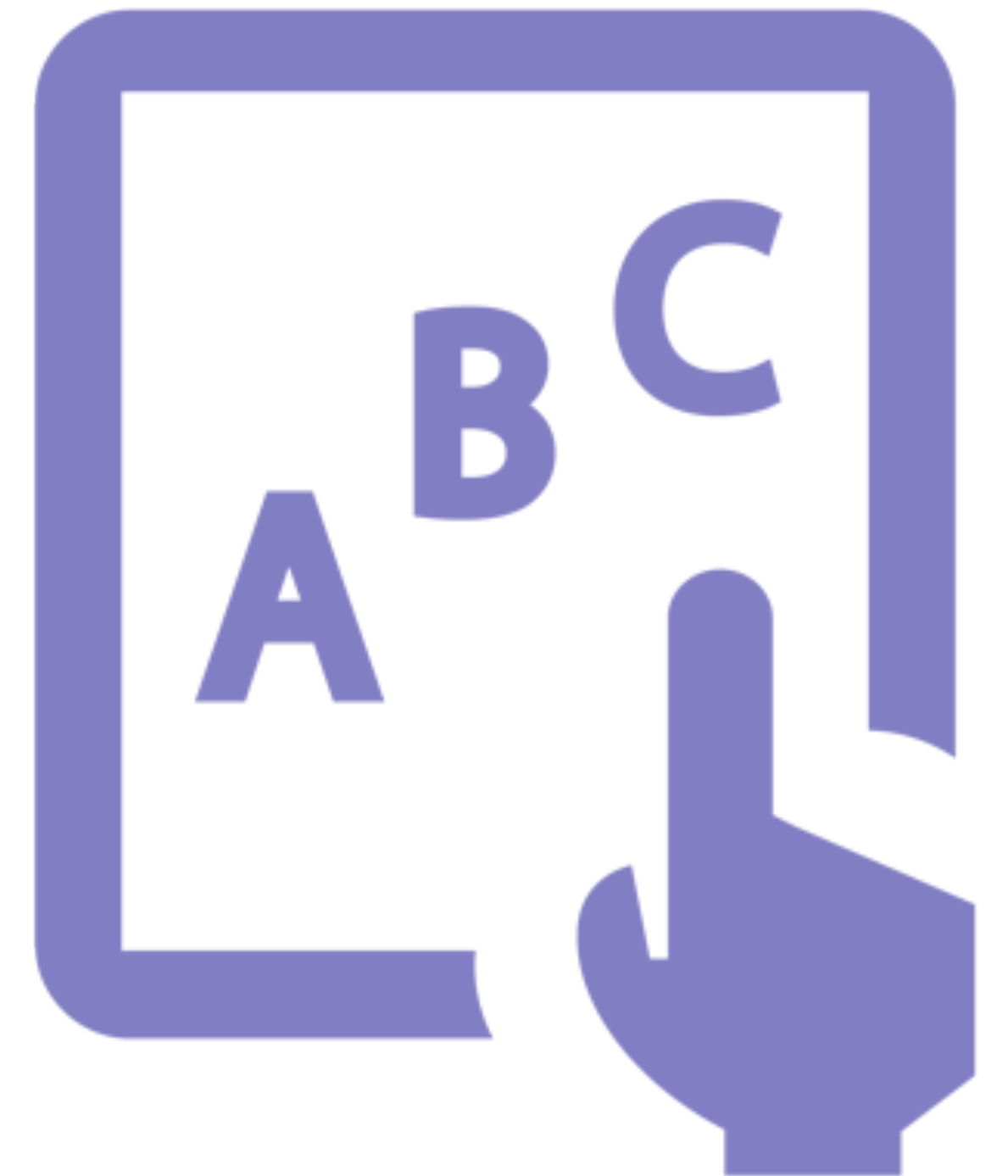
To reason means to figure out with standards. All reasoning is an attempt to figure something out or to resolve a question. This involves several factors; taking time to clearly and precisely state the question at issue; possibly breaking the question into subquestions; expressing the question in several ways to clarify its meaning and scope; identifying if the question has one right answer, is a matter of opinion, or requires reasoning from more than one point of view.

Assumptions

Not everything can be questioned all of the time, thus all reasoning is based on some assumptions. People who think critically seek a clear understanding of the assumptions they are making and the assumptions that underlie the reasoning of others. They can distinguish between assumptions that are justifiable in the context and those that are not.

Assumptions are often the grounds for prejudice, stereotypes, biases, distortions and other errors in one's reasoning that one would not like to be aware of. Effective reasoning means assessing these assumptions, as well as those of others.

To achieve high standards in thinking one must try to clearly identify one's assumptions and determine whether they are justifiable. In doing this it is necessary to exercise balanced judgment in considering how assumptions are shaping one's point of view.



Point of View



All reasoning is done from some point of view. The world is complex and any given phenomena may be understood from many different dimensions. One's reasoning will only ever be a partial account of the world and it is important to identify what is the main point of view that we are using and to make this explicit.

In identifying points of view, one can seek other perspectives and identify their strengths as well as weaknesses. In presenting one's point of view and assessing the perspectives of others, inclusiveness, open-mindedness, empathy, and balance of judgment are required.

In contrast with preference, which is only ever a partial subjective interpretation, in seeking objective reasons one is looking for a balanced assessment or judgment of different subjective accounts while maintaining awareness of one's own perspective in reconstructing and judging them.

Information

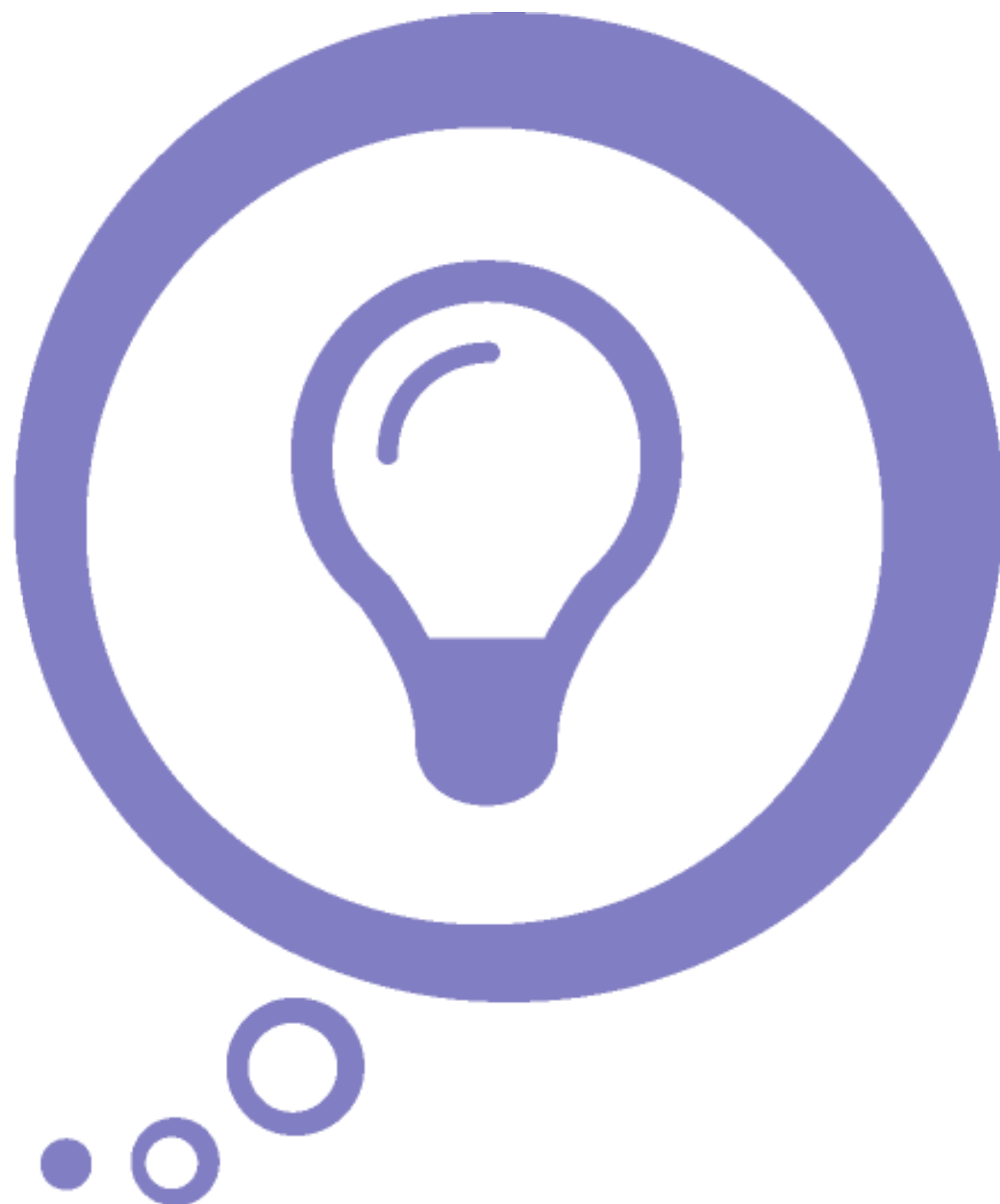
All reasoning is based on data or information of some kind. A reason is fundamentally based on evidence given and that evidence is ultimately information or data. Whenever we construct a case, if this is done through reasoning, then it will be based on information of some kind.

An argument is only ever as good as the premise and the information contained in those premises. Claims should be restricted to those supported by the information provided. Information comes in varying degrees of quality, thus it is necessary to always ask where the information is coming from and make some assessment to its potential validity and accuracy.

Search for information that opposes one's position as well as information that supports it. Make sure that all information used is clear, accurate, and relevant to the question at issue. Make sure sufficient information has been gathered to present a balanced case.



Concepts



All reasoning is ultimately created by concepts and ideas. Being able to identify and express clearly the abstract ideas used within the process of reasoning is of fundamental value. Conceptual frameworks are what give structure to reasoning, by defining well the concepts, categories and the interrelationships being used we can create sound, clear and coherent reasons that can be easily communicated.

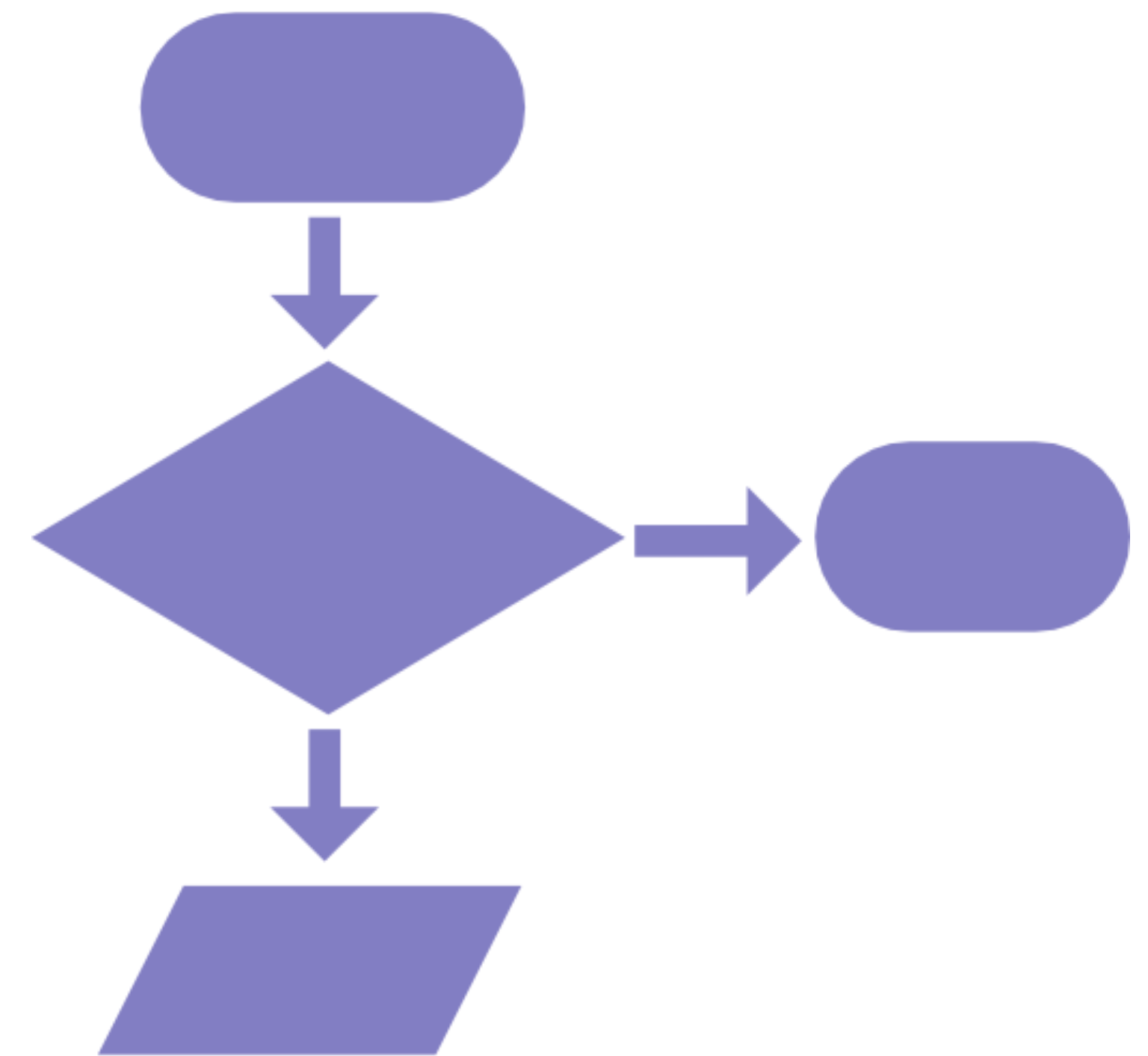
Concepts are the building blocks of reasoning and they need to be well built, i.e. well defined. It is important to identify the concepts being used and the definitions of those concepts; concepts should be used with care and precision.

Effective reasoning involves the use of abstraction in order to define different levels to a conceptual framework, with higher more abstract concepts used to structure lower more concrete ideas. Understanding the use of abstraction enables the appropriate structuring and categorization of an argument.

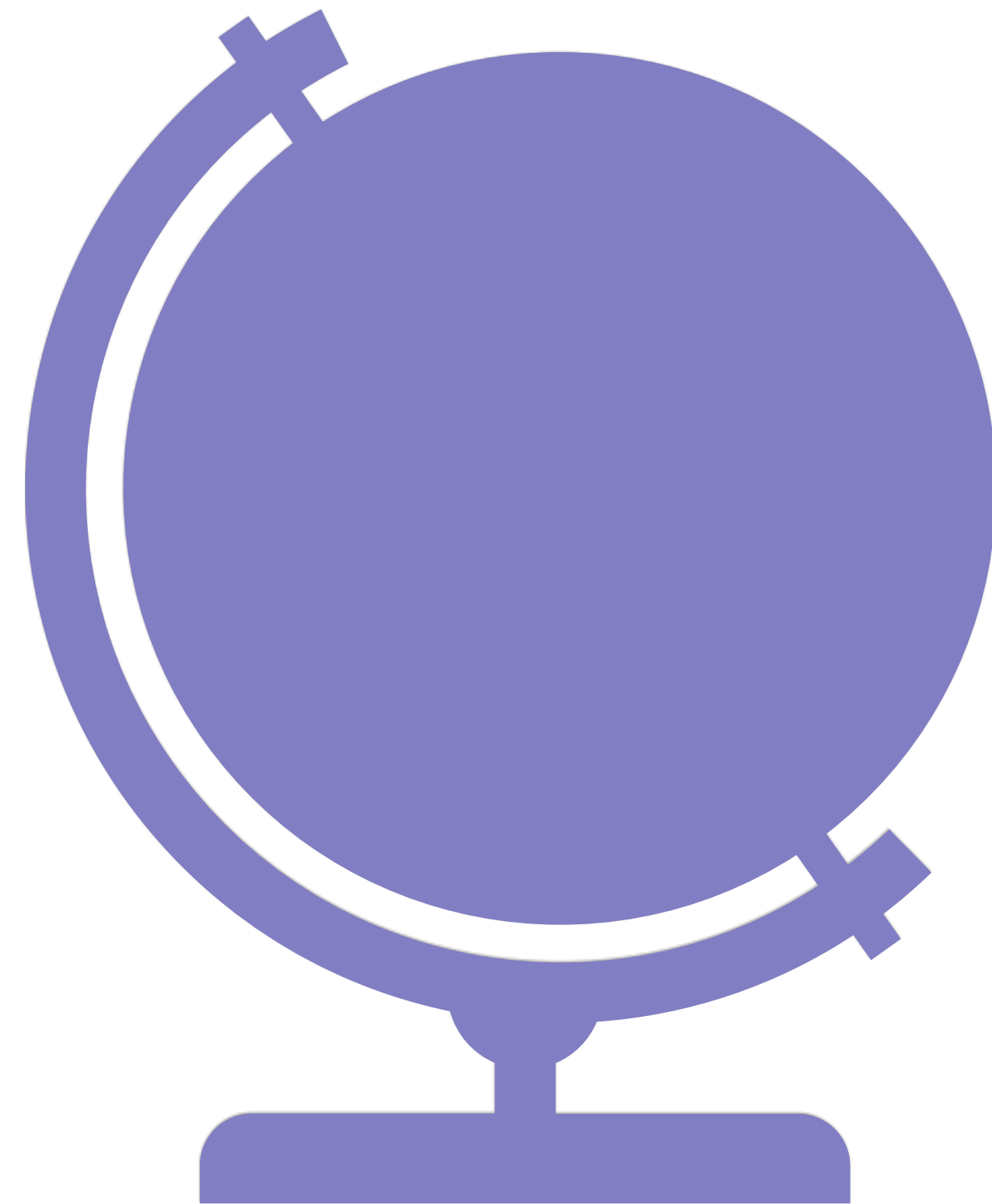
Inference

All reasoning contains inference through which we draw conclusions. The inference is the logical set of connections that take us from one place (the premise) to another (the conclusion), without inference there is no reasoning. Reasoning contains inferences by which we draw conclusions and give meaning to data.

Effective reasoning involves the process of thinking about something logically in order to infer a conclusion or judgment based upon information. Thus it is important to not only identify the information and concepts being used but also the logical connections that are being drawn between them. It is important to be aware as to how the case is constructed through understanding not only the information and ideas presented but also how they are composed through the arguments logical inference.



Implications



Reasoning leads somewhere and has implications and consequences. Reasoning starts somewhere and takes us somewhere else, to a new conclusion on an issue and these conclusions have implications.

Our thinking governs what we say and do which in turn has consequences; when we reach new conclusions these will have new consequences. Being responsible for our thinking and actions means tracing out the implications and consequences that follow from one's reasoning; taking things to their natural conclusions and asking would that lead to a rational outcome for all.

In tracing out the implications of our reasoning it is important to actively search for negative as well as positive implications in the consideration of all possible consequences.

Standards of Reasoning



Overview



Universal intellectual standards are standards that should be applied to thinking whenever one is interested in checking the quality of reasoning about a problem, issue, or situation.

To think systematically entails having command of these standards. While there are many standards The Critical Thinking Institute defines a list of the central elements of effective reasoning including: Clarity, Accuracy, Precision, Relevance, Depth, Breadth, Logic and Fairness.



Clarity

Clarity is the quality of being clear, coherent and intelligible. Clarity is a universal standard of reasoning. If a proposition is unclear, we cannot determine whether it is accurate or relevant, in fact, we cannot tell anything about it because we do not yet know what it is saying. Thinking and statements have to be refined in order to simplify and clarify them. Once an idea has been clarified the whole communications process can be greatly facilitated and more impactful.



Accuracy



Accuracy is the degree to which the result of a statement or piece of information conforms to the correct state. Try asking your self these questions to achieve better accuracy: is the statement accurate enough to deal with the topic at hand? Can we check that it is accurate? And how accurate is it, can we measure its degree of accuracy?

Precision

Precision may seem similar to accuracy however it is possible to make many statements that are clear and accurate but not precise and thus have little value. For example, saying there are many galaxies in the universe does not really inform us of anything at all as it is too imprecise.

More generally by clarifying and defining the terms and concepts we are using we can say precisely what we mean.



Relevance

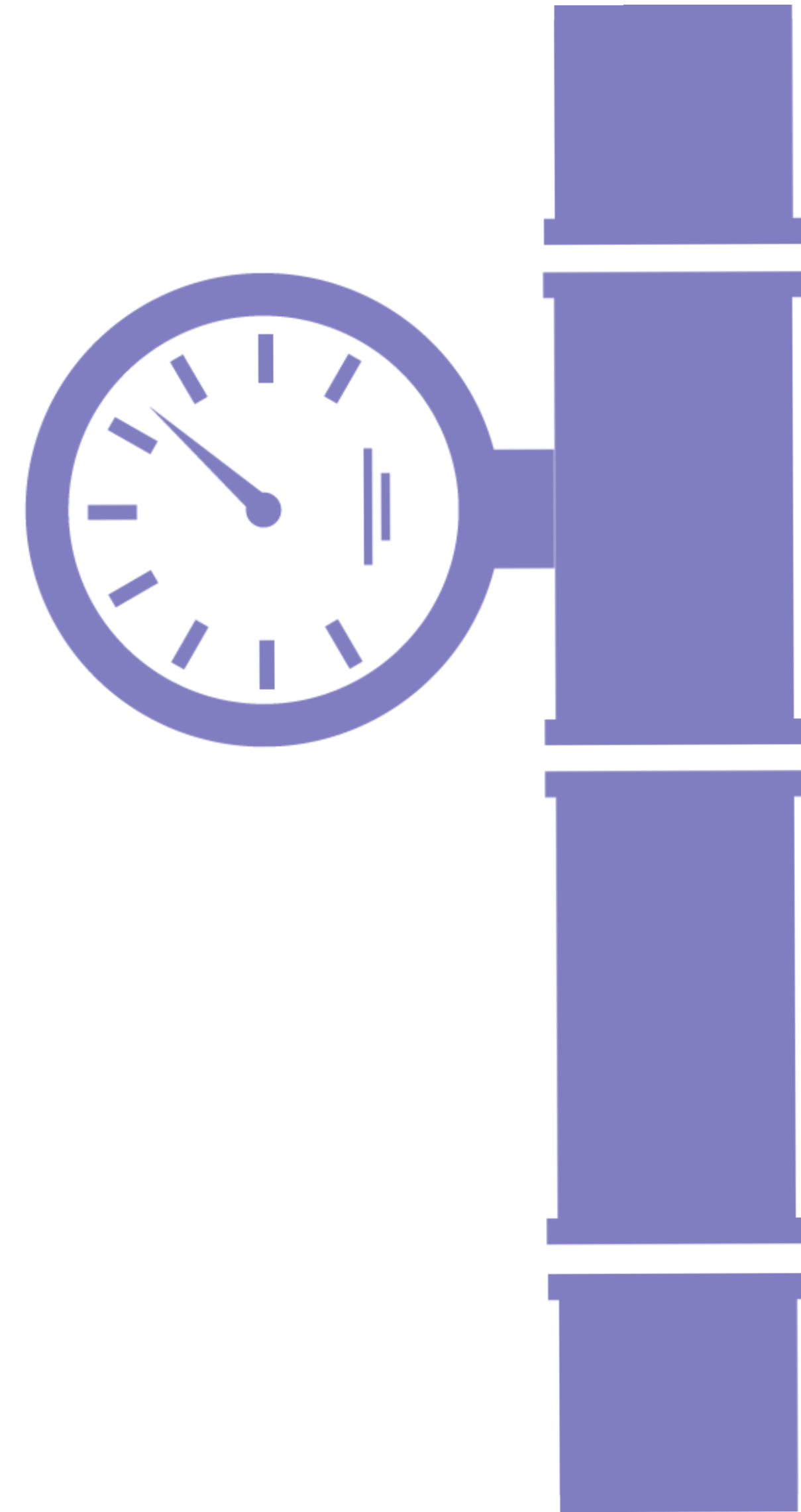


Is what is being said relevant to the topic? Or is the thinking relevant to the problem at hand? Lack of relevance in thought or speak will achieve little and is one way of avoiding the issue. Effective reasoning and dialogue should be adapted specifically to the task at hand and not dealing with some other issue.

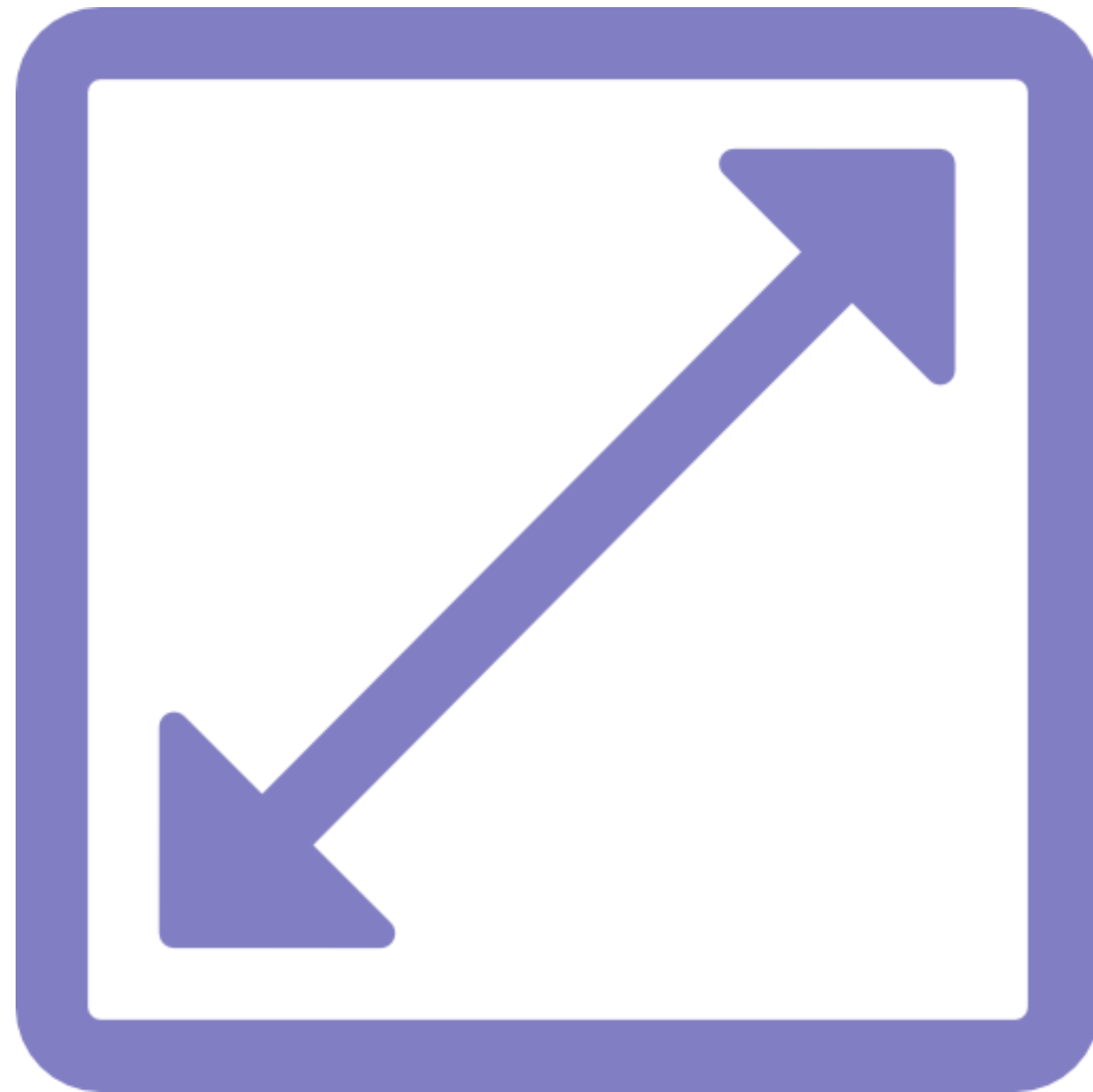
Depth

Does one's thinking have sufficient depth to deal with the complexities at hand? Simple questions require only simple answers, complex issues require a depth of insight and thinking.

One should be able to think deeply about an issue if needed, superficial thinking is typically of little value when dealing with a topic of any complexity.



Breadth



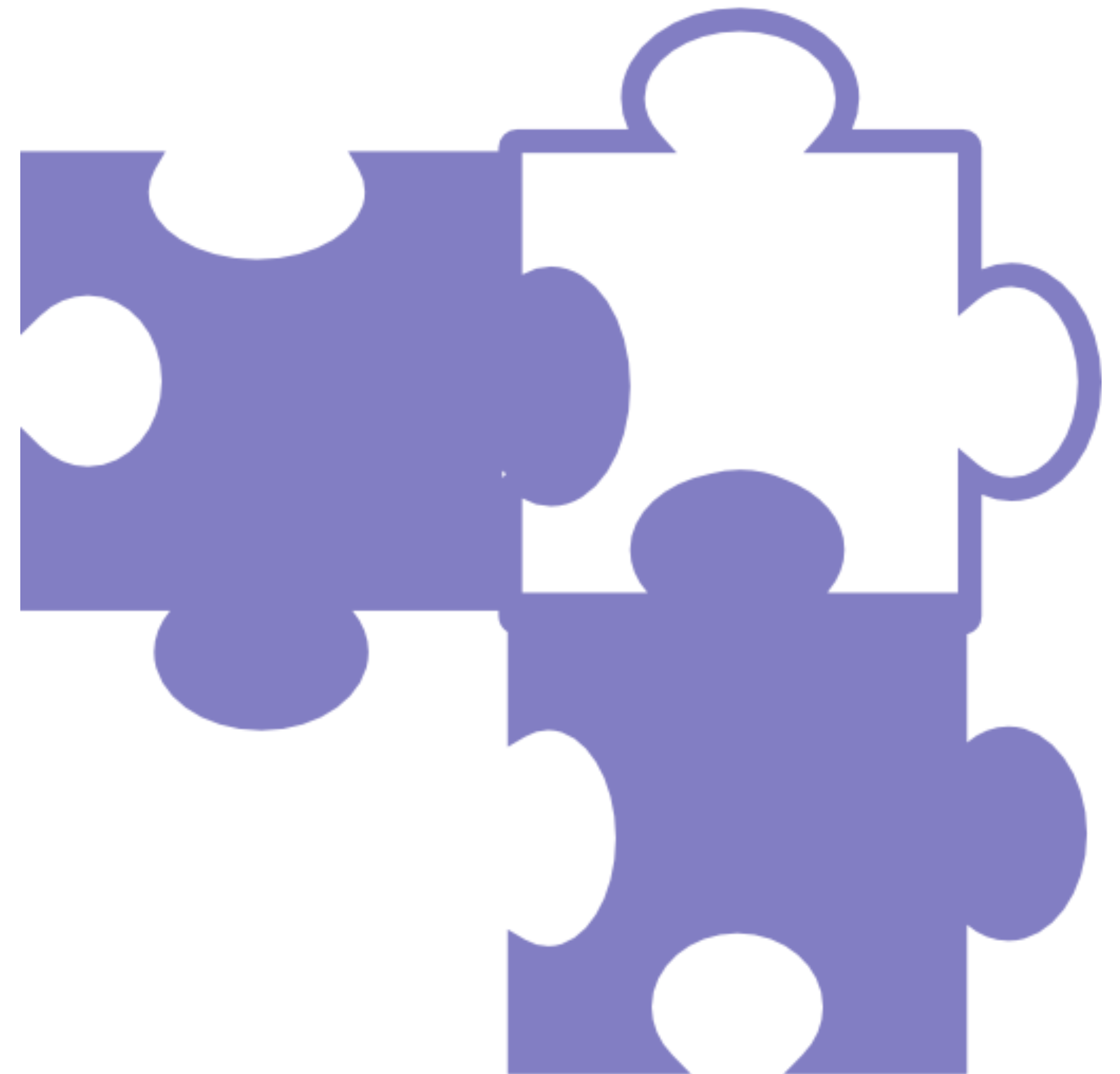
Have we made a full inquiry, gathering data from a wide and diverse set of sources? Is there a sufficient number of perspectives included in the analysis to achieve an inclusive conclusion?

It is possible to go deeply into some specific issue without going horizontally to achieve sufficient breadth of vision and a holistic perspective on the issue.

Logic

Is our reasoning logically consistent? Parts of it may be logically consistent but does it all fit together without inconsistencies?

When the aggregate thoughts are mutually supporting and make sense in combination, then one is thinking in a logical fashion. When the combination in some way is contradictory it is not logical. Our reasoning has to make sense as a whole not just a summation of separate observations or statements.



Fairness



Are we conducting an open-minded unbiased inquiry into the situation? Have we determined our desired conclusion before starting the process of reasoning? If so, then it is not truly a fair process.

There are many ways that our own prejudices and self-interests can enter in to manipulate our conclusions toward certain ends, have we given full thought to how that may be present in our reasoning?



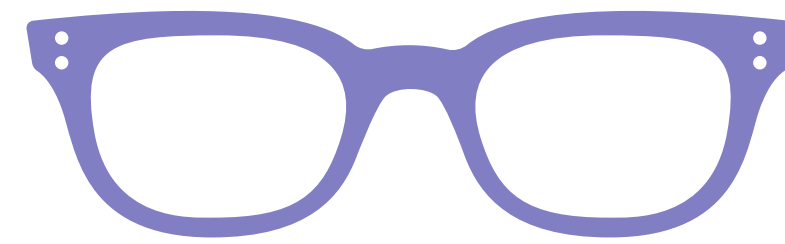
Conclusion

Why Critical Thinking?

Congrats on completing this guide! Now that we have got to the end we should be able to better answer the question, why critical thinking? At this stage, it should be apparent that assessing and improving our thinking critical thinking can help us to become more systematic in our reasoning.

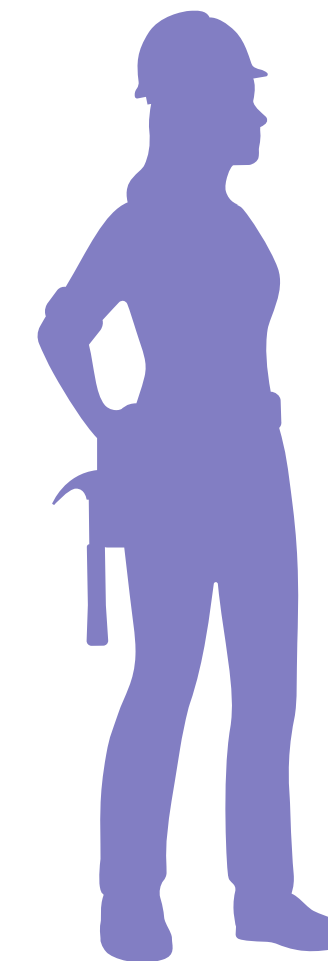
It should help us reach a base level in our thinking to ensure we avoid common pitfalls and errors. Likewise, it should enable us to clarify what is opinion and what is fact, thus preventing us from asserting our opinions as facts and from this learn to better value other people's opinion when it is relevant.

Most of all critical thinking should be an ongoing commitment to overcoming our egocentric and fractured ways of looking at the world so as to better understand and see the broader systems we form part of.



What We See

The result is a more integrated way of seeing the world around us



What We Do

We act from a broader awareness of the systems we form part of

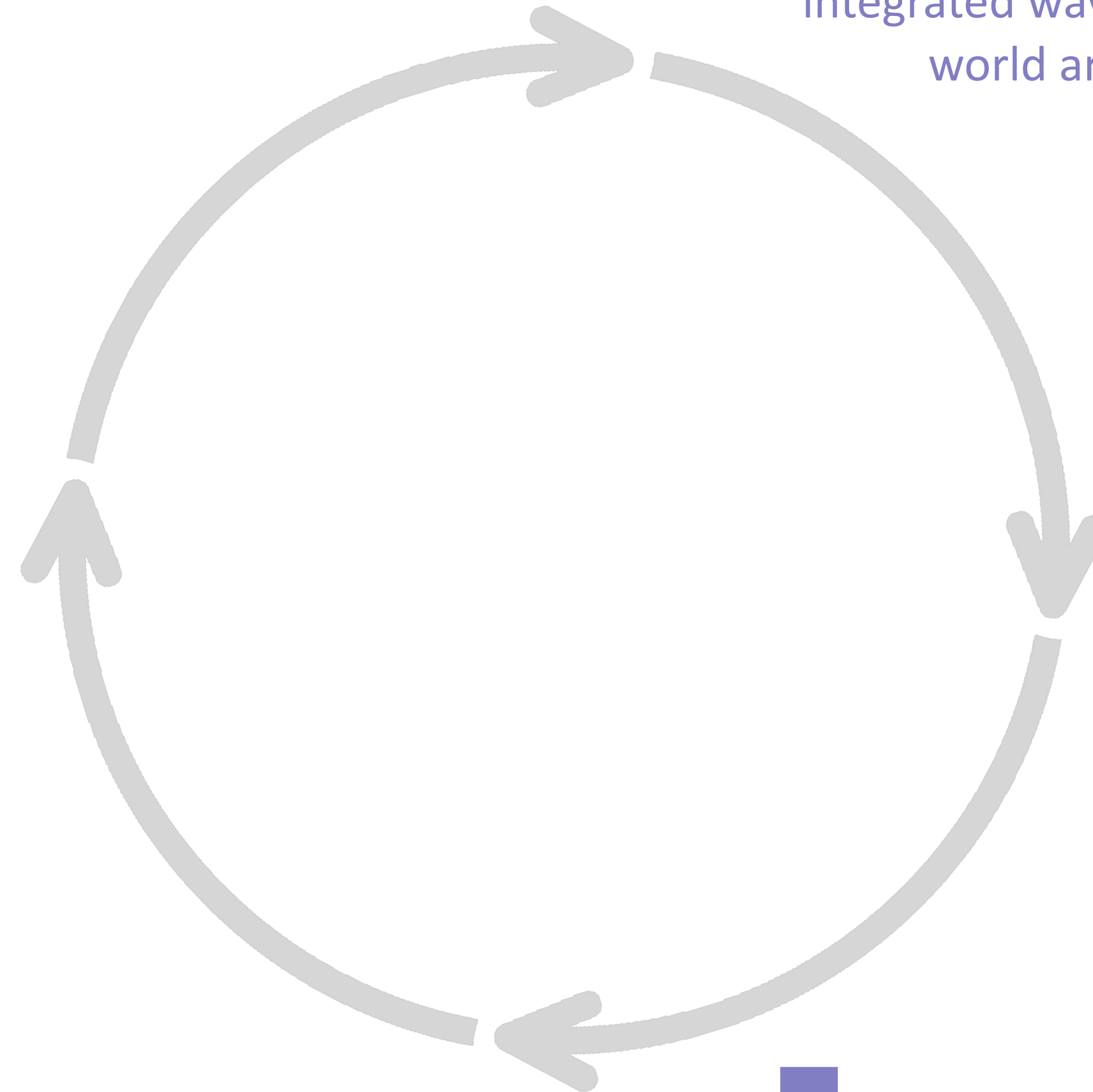
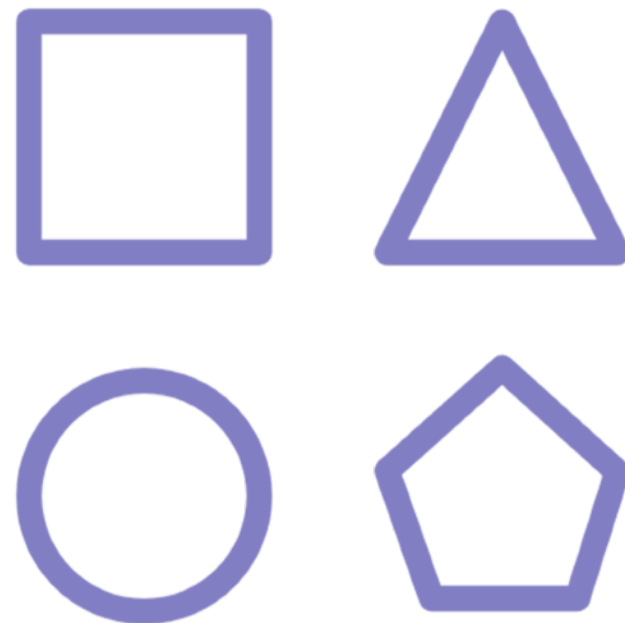


The World We Create

We create systems that are better integrated and work for all

Mental Models

Systematic thinking leads to coherent understanding





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