

Scientific Method in Full

Including entire ‘**Understanding Principles and Standards**’ excerpt from
GAIN: The Dynamics of Successful Economic Outcome
[additional content in blue]

Understanding Principles and Standards and How They Work

**There are ‘cause-and-effect’ and ‘application’ principles
that apply both to productivity and to living life happily and successfully.
And there are ‘standards’ by which to judge the value of things
in establishing well-being for ourselves and others.**

In Productivity Class® Economics, There Are Two Kinds of Principles:

- ‘**Causation**’ principles [also called ‘**natural**’ or ‘**cause-and-effect**’ principles], and
- ‘**Application**’ principles [also called ‘**operating**’ principles (principles of *applying* or *operating with* the cause-and-effect aspects of a subject or in a field of endeavor)].

Cause-and-effect [causation] principles are *those natural cause-and-effect characteristics of how a thing functions or how its phenomena occurs*. These are the *natural laws* – the physics and physical mechanisms – of anything in *nature* or the *physical* universe.

Application [operating] principles are how we *use* a known **cause-and-effect principle** to *cause the effect intentionally* to accomplish a desired result. It is the **application principles** that begin the ‘discipline’, ‘profession’, or ‘skills’ of a field of knowledge – the field of knowledge consisting in its totality of *all* of the *truths, facts and factors*, and the ‘**causation**’ and ‘**application**’ principles employed to operate effectively with it.

Vital Note: If proper ‘*cause-and-effect*’ principles and corresponding ‘*application*’ principles of a subject or field of activity are known and proven, and one applies that ‘*cause-and-effect*’ [causation] function with the proper ‘*application*’ [operating] principles, *one always gets the same, proper result or outcome*.

Correspondingly, if one does *not* get the proper result or outcome, and one gets a poor, or wrong, or no result, then one has *misapplied* that principle, or the principle is false or faulty* – the only exception being ‘other factors’ that may be influencing the activity. [*See **scientific method** below to correct false or faulty principles. *It might be good to keep in mind that if everyone else using such principles get consistently positive outcomes, and you do not, it is probably not the principles that are faulty.*]

Every Subject Has at Its Core, Its Base ‘Fundamental’ Principles

All sciences, all spheres of knowledge, all subjects of study have at their foundation *those truths, factors, and principles of causation and application that give rise to the subject’s existence*. They are the founding core truths, factors, and principles that *the entire subject from there on up is built upon* – and upon which

all further developed **principles** are *derived from*, and must *comply with* and *subordinate to*, or will cause that subject to run askew and bring failure.

The job of all developed advanced and sophisticated principles of any subject is to make the fundamental activities *function better*, to *serve the purpose of the subject's existence*, and to do so within *all variant circumstances*.

In fact, *everything in life or science* has its **causation** and **operating principles** and primary fundamental *truths* and *factors* that make up that aspect of life or that part of the physical world we live in. Certainly, everything *economic*.

'Causative and application principles' are the basis for all successful 'actions'.

It is actions that get the results, cause the effects, create the outcomes.

Economics is a set of actions based upon a specific set of causation and application principles.

True Standards

True standards – of anything – are defined in **producer class** economics as...

- 'accepted measures for accomplishment – *proven through successful experience*';
- any '*proven valid basis*' for the comparison of one thing to another thing;
- the correct way of doing a thing, proven through successful experience.

The Scientific Method

The Scientific Method: (Dictionary.com – modifications for clarity in brackets) noun: **a method of research in which a problem is identified, relevant data are gathered, a hypothesis is formulated from these data, and the hypothesis is empirically tested [through direct observation and experiment].**

When dealing with **principles, factors, standards**, etc., you have to know you've got them right. The method used to ensure the correctness of human knowledge and understanding is the **scientific method**. It is called the **scientific method** because it is a method that *scientifically establishes the trueness or falseness or the accuracy or inaccuracy of a hypothesis* – '**a supposition or proposed explanation [of something] made on the basis of limited evidence**' (Shorter Oxford English Dictionary – modifications for clarity in brackets).

The word 'scientific' makes it sound complicated, sophisticated, or advanced. *It is not*. It is very basic and fundamental to *how humans understand or determine the trueness of anything* – including laymen, and even children.

The **Basic Scientific Method** is:

- Make an **Observation** of some phenomenon, event, or activity.
- Ask a **Question** about it – how it occurs; why it occurs; how it works when it does occur; what factors are necessary for its occurrence; etc.
- Based on your *observations*, create a **Hypothesis** that should answer your question.
- **Experiment** to substantiate, prove, or disprove the hypothesis.
- **Analyze** the results.
- Draw a **Conclusion** based on the results of your experiments and analysis.

If you just look at it, its innate human '*figuring something out*' process can be easily seen: You see something; you get an idea or wonder something about it; you suppose what the answer probably is or propose a probable answer; you do something that will show whether or not your supposed or proposed answer is true; you analyze what you've done; and draw some conclusion about it – maybe you keep doing this over and over until you figure the thing out.

That's it. That is the **basic scientific method**. Only the **standards** we apply, and the complexity of the subject matter, is what makes it difficult or requiring. The process itself is just the basic *innate human 'figuring something out' process* at work.

What are missing in **basic scientific method**, however, are *What Questions, Valid Evidence, Confirmation,* and **Documentation**. One can do the **scientific method** in its most *basic* form and *flub* it. Therefore, we must add:

- **'Determine what is needed or wanted to be known'** as the true first step;
 - What is needed to be known *in order to accomplish the reason for knowing it*. The primary reason for thought and knowledge is to *'do'* – to accomplish, achieve, or *'cause'* something. Once you have established that, you can begin asking the right questions – what is needed to be known *in order to accomplish the reason for knowing it*.
 - Keep in mind that all subjects have a basis – a human purpose for knowing it, or a genetic reason it having evolved into existence. Accomplishing this purpose requires knowing what is true or untrue about it, because knowing what is true leads to success, and believing something is true that is false leads to failure. Every aspect of life is an *'application'* of *'cause-and-effect'* principles in an attempt to achieve success on that dynamic of life. Our career specialty and our pursuit of economic **basic purpose** success lies right smack in the heart of that.
 - Then again [remembering we are talking about **'scientific method'** here], sometimes *'curiosity'* – especially about the truth of something – is all the purpose you need.

Nevertheless, let's assume at this point that you are looking for some *useful* fact, factor, understanding of something, principle, etc. – useful to you, anyway – and you therefore *need it to be true*.

- Gather only **Valid Evidence** – **'something that shows something else to be true or valid'**. In order for something to *be evidence*, it must actually *show* that something is *'true'* or *'likely to be true'* – *something that makes it 'evident' the thing is true*. Beware of all bias – especially your own:
 - These are key words here. Understand them correctly:
 - Valid (New Oxford American dictionary) **"having a sound basis in logic or fact; reasonable or cogent"**.
 - Evident (New Oxford American dictionary) **"plain or obvious; clearly seen or understood"**.
 - Bias (New Oxford American dictionary) **"Prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair"**. Or, in our case, ***"wanting an outcome to show something already predetermined or different than what might be true, and favoring evidence or experimentation that shows only that."***
- **Confirmation** of results – through *'repetition' by others* or *'consistency' of real-life results and outcomes under varied conditions*, as the last step; including
 - **Documentation** of all activities, factors, observations, conditions, etc. – that means *everything*. After all, how are your peers or superiors to check and approve your work if you don't have all the documentation that can be checked up on, repeatedly observed, or experimentally duplicated.

This is the key to any knowledge: *Is it useful?* *'Useful'* means that you or others can *continue to apply it* to desired results. What good is an experiment done once, never to be confirmed, so that it can be put to use, even if that usage is a step in a larger process.

So This is Your Complete 'Scientific Method'

- **Make an Observation** of some phenomenon, event, or activity.
- **'Determine what is needed or wanted to be known about it'** as the true first step – how it occurs; why it occurs; how it works when it does occur; what factors are necessary for its occurrence; can it be put to use; etc.
- **Gather only Valid Evidence** pertinent to your *'observations'* and to *'answering your questions'*.

- **Create a Hypothesis** based on your *observations* and *valid evidence*, that should answer your *question[s]*.
- **Experiment** to substantiate, prove, or disprove the hypothesis.
 - **Document all activities, factors, observations, conditions, etc.** – that means *everything*.
- **Analyze** the results.
- **Draw a Conclusion** based on the results of your experiments and analysis.
- **Confirm your results** – through ‘*repetition*’ by others or ‘*consistency*’ of *real-life results and outcomes under varied conditions*; being sure to include that you...
 - **Continue to document all activities, factors, observations, conditions, etc.** – and that still means *everything*.
- **Continue to draw new conclusions** based on the results of your continued work.

Again, keep it simple here. Complexity *only comes in when the subject matter or the work demands it*. Scientific Method is just how people already think and figure things out in the first place.

You see something; you get an idea or wonder something about it; you suppose what the answer probably is or propose a probable answer; you do something that will show whether or not your supposed or proposed answer is true; you analyze what you’ve done; and draw some conclusion about it – maybe you keep doing this over and over until you figure the thing out – or better than that, invent something new, innovate and improve something, or discover a useful truth – for yourself or others in need of it.

Most of the time we already do the first four steps almost daily, just to get lazy when the work part starts. But when it’s important, we naturally do the rest. [*Except for the documentation. For some reason that seems to be what separates the amateurs from the professionals, the economically successful from the ‘almost-ers’. Well, now you know. So the future is up to you.*]

Understanding this explanation of **principles** and **standards** and how they become established through **scientific method** will be necessary for you to use the materials in this handbook.



The Dynamics of Successful Economic Outcome

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