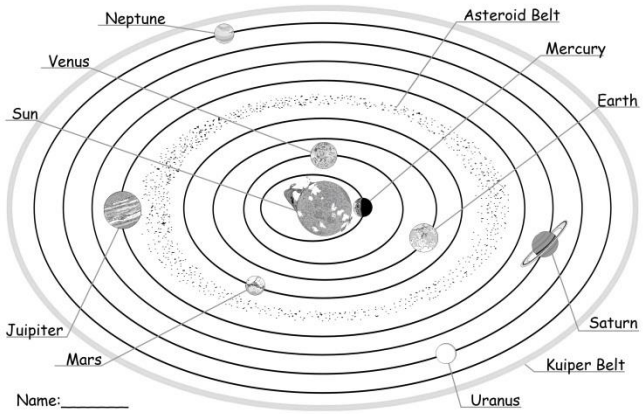
## INTRODUCTION

Everything is related to everything, in a system of systems. In Systems Thinking, it is helpful to keep an open mind as to how **all** kinds of things are causally interlinked in often complex ways. Sometimes it is helpful to think in terms of 'systems **within** systems **within** systems', but this can potentially lead us to imagine 'containment' and system boundaries where there are none in reality. Therefore, we would generally advise you to think more in terms of 'systems **among** systems **among** systems', such that one is not only and exclusively contained within another – but may be inter-related in other ways.

## THE SOLAR SYSTEM

Perhaps an obvious and familiar illustration is the 'Solar System'. We can think of the sun and the system of orbiting planets, under its influence – up to and potentially including Pluto – as a single system. The Earth is the third planet out from the sun and is itself another kind of system.



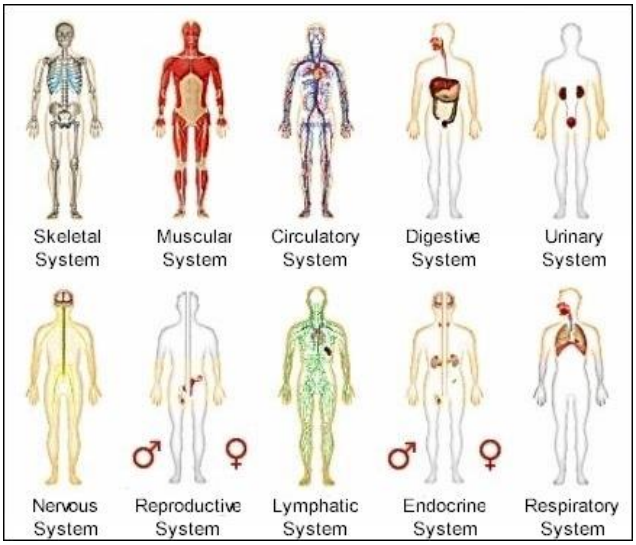

One of the things that make the Earth unique as a system within the wider solar system, is that it supports an atmosphere – and that atmosphere supports LIFE. That life then exists within the biosphere. Note that each of these subsequent things can **itself** be considered a system. The atmosphere is a system. The biosphere is a system. An individual organism is a system. It is also evident that the relationships BETWEEN systems are not simply that of one '**within'** the other. The planets exist within the solar system and operate under the influence of the sun's gravity – among other things. Yet at the same time, the gravities of the planets **also** influence the sun – albeit unequally. Similarly, life exists within the system of the earth's atmosphere and associated climate, yet that life also **influences** the climate – perhaps no life form more so than *homo sapiens*. You may find it helpful to hold in mind the image of a sponge in water – the sponge is in the water, but simultaneously, the water is in the sponge. Such concepts of 'among' and 'within' will prove helpful, as we discover that everything is related to everything when we consider ***global poverty*** too.

## NATURAL AND MAN-MADE SYSTEMS

On our planet, not only do we recognise the operation of '**natural**' systems, but we also acknowledge **man-made** systems operating alongside them. Global, national and local **economies**

can all be thought of as systems. Governments can be thought of as systems. Again, all these systems are inter-related in terms of their influences, their **inputs** and their **outputs**. We may conceptually choose to imagine **boundaries** between those systems, but in practice, we seldom encounter anything in the real world that is an entirely self-contained system, separate from all outside influences and without external impacts. Nevertheless, when thinking about such systems and representing them, it may be convenient to **represent** them and think of them as 'self-contained', to focus on those things **within** the system concerned, that are of **most** significance and interest to us, at that point.

## THE BODY AS A SYSTEM

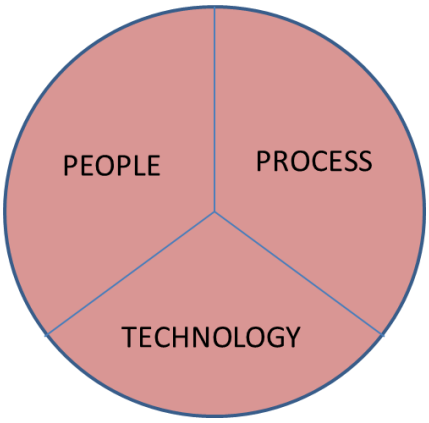



Consider the Human Body as a suitable example. It is common within medical science, to think of our body as a 'system of systems'. These include the digestive system, the immune system, the autonomic system, the cardio-vascular system and – the big daddy of them all – the central nervous system. They are all separately identifiable, but inter-related within a single human body. When that body gets sick, that sickness is recognised as a ***state***, which may have many and various inter-related ***causes*** within the overall body system, subsequently manifesting as a range of ***symptoms***.

So it is with poverty. Poverty itself can be helpfully understood as an undesirable STATE of an individual or group, existing within the wider local-to-global socio-economic system. That wider socio-economic system **includes** the 7 key categories of poverty **fixer** recognised within the 7 Layer Poverty Model.

## SYSTEM COMPONENTS AND STRUCTURE

In Systems Thinking, we particularly focus on ***People, Processes and Technology*** factors, inter-related in terms of causes, inputs and outputs between each other.




In the wider context of Rudyard Kipling's '6 honest serving men', the PRIMARY focus of each such systems component, is **one** of the 6 question types, but others will still be relevant. Hence, for People factors, the primary interest is in ***WHO***. For Process factors it is ***HOW*** and for Technology factors it is ***WHAT***. However, for People factors, we are not **just** interested in who, but also **how** they are organised and **what** their roles and responsibilities are. We are also interested in **what** their knowledge, skills, attitude and experiences are, relative to the role they are playing within the system. The same considerations apply to Process. We may be primarily interested in 'how' the given process works, but we are also interested in **what** steps it is made up of, **when** certain steps must be taken, **what** are its inputs, outputs, dependencies and so on.

## ASKING QUESTIONS ABOUT A SYSTEM

In Systems Thinking as a whole for **man-made** systems, the most significant question of all is: ***WHY***. In other words, we are most interested in the PURPOSE of the system concerned. As ever, the topic could equally be examined using similar questions, such as '**what** is the system intended to do?' However, although this question happens to include the **word** 'what', **conceptually** it is still really aiming at the underlying 'why'. Yes, you're right - it can get a bit confusing if you are not careful.

With **natural** systems, we may have a particular interest in **why** they do what they do, or we may simply accept that they just 'ARE'. Some may even have the same attitude towards man-made systems, accepting that they too just ARE. **Not so, with Systems Thinking and poverty**. We very much want to understand all key details about any relevant man-made system and perhaps none more so than "**WHY**?" Once you understand this, then you can ask other useful questions, such as whether you think such a given system purpose is justifiable, or morally 'right'. You may also question if the existing system is the **best way** of going about achieving the given purpose. So again, although you may start with the question 'why', you move on from there to consider '**how'** the system currently achieves its intended purpose and '**how else'** that same purpose might be achieved. This opens the way for ***comparing and contrasting*** between existing man-made systems and potential **alternative** systems to achieve the **same** purpose.

## RESPONDING TO POVERTY AS A SYSTEM STATE

As mentioned above, from the perspective of Systems Thinking, poverty is best thought of as a **state** – one that can change. We may **characterise** it as an undesirable state (or a failing) within the current global-to-local economic and social system – while recognising that this system is itself a system of systems. Therefore, if we don't want that undesirable **outcome** of the current socio-economic systems, either we can seek to CHANGE the current systems, or we can develop ADDITIONAL systems alongside the current 'system-of-systems', to respond to and **compensate** for some of the existing systems' undesirable outcomes, outputs, or impacts – such as poverty.

In Systems Thinking, you can do **both**. If you maintained BOTH the existing system and the new compensating system in parallel, they would both then be inter-related anyway. Hence, we clearly have some **choices** about our human-driven action, regarding poverty. We can EITHER develop new compensating systems to address the undesirable poverty state outcomes (eg charitable giving), or we can change elements within the existing system (eg socio-economic reform, or revolution) - or we can do both. Clearly, if we do 'none of the above', then as Einstein himself suggests, by endlessly repeating the same processes within the existing systems, we should expect the same end result – in this case, recurring instances of poverty.

## SYSTEMS THINKING IN THE REAL WORLD

In practice, when you examine what is **happening** around the world, BOTH types of action are consistently occurring in parallel. Existing socio-economic systems are being altered and compensating socio-economic systems are also being implemented and maintained. There is a valid question as to whether our current socio-economic system **inevitably** creates poverty. Insofar as it allows for measurable economic DIFFERENCE (rather than uniformity), then it clearly permits a **relative** form of poverty, in the sense that there can be significant economic variation between the 'richest' and 'poorest'. However, we are more interested here in the extent to which it actively **creates**, or passively permits ***EXTREME*** poverty, which goes beyond what we would consider to be ***minimum humanitarian standards***.

The evidence that it passively allows extreme poverty, is clear – because we see over a billion people on the planet effectively in that state. Evidence of how it actively creates extreme poverty, is perhaps less so. However, since **people** operate within the system and people **can** clearly actively create the conditions that lead to poverty (eg war), then in **that** sense and to that extent, it is true that the current 'system' (including the people within it) **can** actively create extreme poverty – whether or not that is intentional.

In the light of variously evident causal relationships between extreme poverty and prevailing socio-economic systems, there are those who look at our current 'system-of-systems' and advocate an entire ***new world order***. Instead, our emphasis at GAB is to ***focus the attention of existing poverty fixers*** towards more effective **action** in 2 areas:

1. Advocate for **key** changes in certain ***aspects*** of the existing socio-economic systems that seem to contribute **most** to instances of poverty, in terms of ***quantity*** and ***severity***; and

2. Develop effective **parallel** systems to compensate for and address the inevitable **instances** of poverty that will continue to arise from evident limitations, or failings in those existing systems.

## SCIENCE: BUT NOT OF THE ROCKET VARIETY

This approach is both analytical and scientific - but it is not '**rocket science'**. When examining any system through the 'magic spectacles' of Systems Thinking, there are 3 simple steps we can take in each of the 3 recognised areas of interest: ***definition, explanation and optimisation***. Each step involves asking simple questions and analysing the answers.

1. **People Factors:**
    a. Definition: **What** are they currently (organisation structures, participants, KASE profiles, roles and responsibilities)?
    b. Explanation: **Why** are they that way (perceived purpose, history, constraints, risks)?
    c. Optimisation: **How** might they reasonably be improved (measurement criteria, KPIs, timescales, scale, constraints, difficulty, costs, capacity)?
2. **Process factors:**
    a. Definition: **What** are they currently (steps, sequence, dependencies, timings, inputs and outputs)
    b. Explanation: **Why** are they that way (perceived purpose, history, constraints, risks)?
    c. Optimisation: **How** might they reasonably be improved (measurement criteria, KPIs, timescales, scale, constraints, difficulty, costs, capacity)?
3. **Technology Factors:**
    a. Definition: **What** technology is involved and what are its key attributes?
    b. Explanation: **Why** are they that way (perceived purpose, history, constraints, risks)?
    c. Optimisation: **How** might it reasonably be improved (measurement criteria, KPIs, timescales, scale, constraints, difficulty, costs, capacity)?

As you can see, the pattern of 3 key question areas in each section repeats itself: what/why/how. The **content** and the detail of the 'what' varies, but the considerations in the other 2 areas of explanation and optimisation remain remarkably similar. When considering 'improvement' of any kind, one needs to be clear on the MEASUREMENT system and aware of potential TRADE-OFFS between various options, such as: time and money, difficulty and risk, scale and capacity. Those involved in evaluation and DECISION-MAKING between various possible options, must therefore repeatedly apply the 'ADA' process to assist such choice: Assess, Decide, Act. Each effective action moves the system in question onto a new mode of operation and set of inter-relationships. One key consideration will always be the ***cost-benefit*** of making any transition from 'here to there' - from the existing system to the anticipated future system.

## SYSTEM EVOLUTION

When looking to improve and optimise any system, it may be easiest to start by looking at the way the given system is NOW. This reflects a common 3-step approach to improving anything, namely: where are we, where do we want to get to and how are we going to get there. Notice it starts with where we are currently. On other occasions, you may find the existing system so confusing and/or

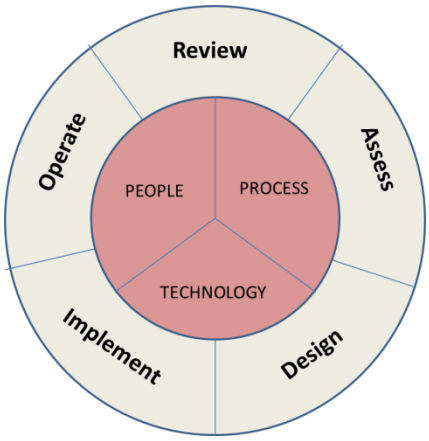


dysfunctional, that time will be better spent starting entirely from scratch. Even if the existing system is **not** considered dysfunctional, system and process **innovation** can often still be helped by imagining things if you were to start again from scratch. In that case, you are not looking at the **sequence** of questions to ask as: what/why/how. Instead, you are best starting with the WHY question, to help you imagine the end point and outcome you are looking to achieve. This will then assist fresh thinking in the HOW area, bearing in mind realistic CONSTRAINTS that any potential system would typically have to operate within. These steps would then guide the WHAT, in terms of defining the recommended new system design.

It is clear that system evolution and design is an iterative process. This is not just because of changes WITHIN the existing system over time (people changing, technology requiring replacement, etc). There are also EXTERNAL changes which have an effect. On the positive side, new technology may become available, or there may be relevant innovations in process thinking. Other factors may be changes in the constraints under which the system has to operate. These changes may be perceived as combinations of both positive and negative factors for the existing system.

## SYSTEM EVOLUTION VIA 'RADIO'

In the absence of some better methodology, we recommend an approach to managed System evolution and improvement we call '**RADIO'**: Review, Assess, Design, Implement, Operate. If you like, you can think of it as a way of continuously '***tuning***' your system to shifting realities (see what we did there?). Against the background of all internal and external changes affecting existing systems, some of those changes will prompt a Review of the current system, by its relevant stakeholders – whether formal, or informal.




The *Review* triggers relevant interested parties to *Assess* the existing system in the light of current realities and possible future trends. This might include asking participants within any system giving feedback on how they think it is going and how it might be improved. There would also typically be some kind of measurement of the effectiveness of the existing system, through Key Performance Indicators (KPI's). For example, in the context of poverty, if you are looking at **farming systems**, you might be interested in the CROP YIELDS from the existing system of agriculture. Measurement is usually accomplished by looking at combinations of system INPUTS and OUTPUTS compared over time.

Such assessments enable you to analyse the existing system against what was expected and against other similar systems. However, systems can also be improved by just IMAGINING something better, or by identifying internal inefficiencies in the current way of doing things. Once any change has been assessed as desirable, the NEW system will need to be *Designed*. This might be a major step in larger and more complex systems. In smaller system, it may simply involve an individual deciding on a different way of doing things in the future, in their own head and as part of their own practices. However involved the re-design is, it should take into account the impact on ALL elements of the system. If one part **changes**, ALL parts are **affected** - however slightly. That brings us onto *Implementation*, which is the stage where the transition to the new mode of system operation is managed. Finally, once the implementation of the new system is complete, it just remains to *Operate* it. By these 5 steps, the system which was once envisaged as a **future** mode of operation thus becomes the **current** mode of operation and the RADIO system improvement process has completed a full cycle.

## AN INTEGRATED POVERTY MODEL

This is the dynamic, changing world in which we live, as seen through the lens of Systems Thinking and as illustrated in the context of overcoming poverty, below. The sooner we open our eyes to our world of systems among systems, the more effective we believe our collective poverty alleviation efforts will be.