



The magazine of the  
World Intelligence Network

# THE WIN ONE

10/12/14

Edited by Graham Powell



## Introduction by the Editor, Graham Powell.

As I write this, I'm looking out across the desert, hence the scene on the front cover. Such a sight makes a person think, the following words coming to my mind:

‘When life is viewed as a desert of opportunity, one which is accompanied by sustenance, knowledge and an openness to learning, it remains, fundamentally, about being.’

Harsh conditions often bring out the best in us, and from small beginnings, great accomplishments emerge. Anja Jaenicke's poem on page 3 expresses that, the notion of 'being' also appearing in Paul Edgeworth's excellent essay on Heidegger's thoughts on some of Aristotle's Metaphysics. (See pages 4 to 12)

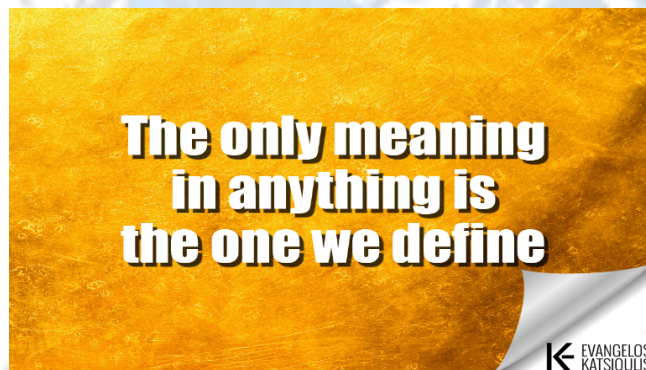
This is followed by an evaluation tool created by Dr. Greg A. Grove (on pages 13 and 14); during most of this edition, reflections on various aspects to life have been supplied by the WIN founder, Dr. Evangelos Katsioulis. One of them is displayed below. Enjoy those.

Paul Peters has written two essays: one on a paradox, the other on austerity; they are separated by Therese Waneck's powerful poem on remembrance (on page 32). It denotes another aspect to existence and being. There are some random notions from me as well on page 24. Look at Paul's thought-provoking essays on pages 19 to 44.

Alan Wing-lun has kindly sent in a self-portrait and a poem. They are on pages 15 and 18 respectively.

My main contribution this time consists of a few puzzles and a quiz to be done during a coffee break. They start on page 16. The answer grid to the crossword from the previous edition is on page 44; then the answers to the puzzles and the quiz in this WIN ONE can be consulted on pages 45 and 46.

I hope you enjoy this magazine!



All legal rights remain with the contributors.

All opinions expressed are solely of the writer, not of the World Intelligence Network as a whole.

## THE MOUNTAINEER

Every muscle is in pain  
No higher end here to attain  
A mountain path, rocky and steep  
A final glance, a single leap  
This is the crown, this is man's end  
A coded message here to send;  
Death so close is on this peak  
Nothing to find, no more to seek  
All narrow limitations kept  
By the flood of life, over swept  
Rotating winds send me a blow  
From far above, and from below  
Endless views, space disappears  
Blurred vision comes from silver tears;  
Here on this top the air so thin  
No race to lose, nor win  
I have become this planet's eyes  
Straight lines are curved to circumcise  
The endless desert above me;  
Black vastness I can't oversee  
The stars are close and burn so hot  
But I am pinned, can't leave this spot  
Life's current is simplicity,  
Earth holds me tight by gravity;  
Through heavy fog I walk back blind  
In confidence that I will find  
The right way home so very sweet  
I feel myself from head to feet;  
And in the village down the valley  
I cross the square I cross the alley  
Moisture crawls through bones so damp,  
And I hold up high my tiny lamp  
So calm my heart throughout this night  
And the sun sparks turn shadows into light.

Written by: Anja Jaenicke, Nov. 2014



## Heidegger on Aristotle's *Metaphysics* Θ 1-3

by Paul Edgeworth

*Aristotle's Metaphysics* Θ 1-3: *On the Essence and Actuality of Force* is volume 33 of Martin Heidegger's *Gesamtausgabe* and is based on a lecture course offered at the University of Freiberg in the summer semester of 1931.<sup>1</sup> The volume presents Heidegger's translation and original commentary on the first three chapters of Book Θ of Aristotle's *Metaphysics*. As the subtitle indicates, Heidegger's detailed interpretation of each chapter deals with the essence and actuality of force. The phenomenon of force is discussed thoroughly in all its variations, e.g., potentiality, force, power and capability. As can be seen, Heidegger often finds it necessary to render the Greek in multiple alternatives so as to allow his German to express Aristotle's philosophical thought.<sup>2</sup> While the present volume represents an English translation of a German rendering from the Greek, it is nonetheless clear that Heidegger had a good sense of what Aristotle is about, and that he demonstrates this by opening up and making vibrant whole areas of thought that have lost life in our tradition. Heidegger's own original unveiling of what was comprehended by Aristotle thus helps keep alive "Aristotle's unresolved innermost questioning."<sup>3</sup>

Here, Heidegger's volume is divided into four parts: an Introduction entitled "The Aristotelian Question about the Manifold and Oneness of Being," and three chapters entitled respectively, *Metaphysics* Θ 1. The Unity of the Essence of Δύναμις κατὰ Κίνησιν, Force understood as Movement..." "Metaphysics Θ 2. The Division of Δύναμις κατὰ Κίνησιν for the Purpose of Elucidating Its Essence," and *Metaphysics* Θ 3. The Actuality of Δύναμις κατὰ Κίνησιν or Capability.

It is beyond the scope of this paper to discuss each of these chapters in complete detail; however, some of Heidegger's innovative ideas that capture the originality of Aristotle's work will be presented in the passages that follow.

<sup>1</sup> Martin Heidegger, *Aristotle's Metaphysics* Θ 1-3, trans. Walter Brogan and Peter Warnek (Bloomington: Indiana Univ. Press, 1995), ix.

<sup>2</sup> Ibid., xi.

<sup>3</sup> Ibid., 39.

## 1. Introduction: The Aristotelian Question about the Manifold and Oneness of Being

In his Introduction, Heidegger asks us what is being sought in Aristotle's inquiry into δύναμις and ἐνέργεια? What prompts his investigation of potentiality and actuality? The question of potentiality and actuality is a question about beings. The inquiry concerning beings is fundamentally an inquiry concerning being.

Being is the primary one that has to be said of beings, and precisely then the reason that being itself is the one. But Heidegger points out that at the same time being is said in various ways, for it is fourfold (and even tenfold with respect to one of its categories). Already much has been said and clarification is required.

Heidegger translates the first sentence of Book Θ as follows: "We have thus dealt with beings in the primary sense, and that means, with that to which all the other categories of beings are referred back, οὐσία (ousia)."<sup>4</sup> Heidegger goes on to say that the relation back and forth of the other categories occurs as a "gathering" in the λόγος, that is to say, a laying open, a laying forth occurs in recounting and articulating. The meaning of λόγος as relation (a unified gathering) is therefore something more primordial than its meaning as discourse. The gathering of discourse thus makes things accessible and manifest. What Aristotle calls category is, then, that saying which is involved in every assertion in a preeminent way. The essence of the categories is rooted in λόγος as a gathering and making manifest. The other categories are always, in accord with their essence, co-saying the ousia.



But, Heidegger tells us, we do not find "possibility" and "actuality" in any of Aristotle's listings of the categories. Thus for Aristotle, the question of possibility and actuality is not a category question. Rather, says Heidegger, it revolves around the general realm of the question of beings, which is the only question that fundamentally interests Aristotle, and this questioning of what beings are insofar as they are beings is the most proper form of philosophizing. Thus the treatise on potentiality and actuality is one of the ways of questioning about beings as such.

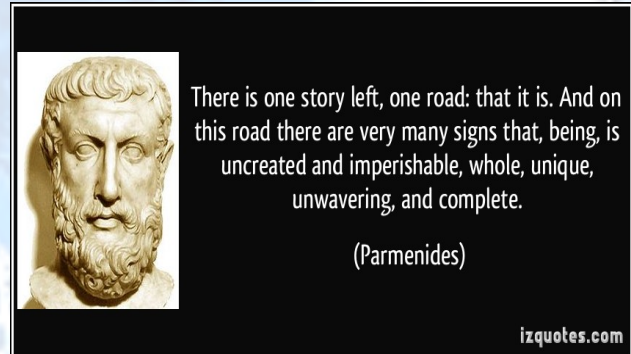
---

<sup>4</sup> Ibid., 2.



Being is fourfold. Chapter ten of Book  $\Theta$  begins: The terms ‘being’ and ‘non-being’ are employed firstly with reference to the categories, and secondly with reference to the potency or actuality of these or their non-potency, and thirdly in the sense of true and false,”<sup>5</sup> and in the beginning of chapter two of Book E we find “But since the unqualified term ‘being’ has several meanings, of which one was seen to be accidental . . . .”<sup>6</sup> Being with respect to the categories, potentiality and actuality, truth and falsity, and the accidental show us that there is a quadruple folding of being. However, Heidegger also points out that being in the sense of the category is not only one among the four-folding, but is in itself a “What is said in many ways,”<sup>7</sup> that is to say, in as many ways as there are categories.

If Aristotle says that being is manifold and indeed multifarious, does he then no longer understand the insight of Parmenides that being is one? Heidegger answers that Aristotle does not renounce the truth of Parmenides, but rather truly comprehends it. How then does Aristotle comprehend the unity of being as a manifold? If being is not a genus, then it cannot be comprehended as a concept. How then are we to understand the relationship of one to its many different ways? Following a discussion of healthiness of different kinds, we see that all the items to which the word “health” applies are healthy with reference to one item, or as some scholars like to say the word “health” has a focal meaning.<sup>8</sup> They have then a unity. The carrying back and forth of the meanings to the first meaning is different; however, the first is the sustaining and guiding basic meaning. This is the unity of analogy. Being then signifies in a way to the way “health” signifies. Heidegger can now translate Aristotle’s first sentence as “We have dealt with the sustaining and leading fundamental meaning of being, to which all the other categories are carried back.”<sup>9</sup> Thus Heidegger in his Introduction has not provided us with a solution to the being question, but he has nevertheless provided us with significant insight not the least of which has been a glimpse into the multifarious richness of the unity of being cascading from and related to the sense of ousia.



<sup>5</sup> Aristotle, *Metaphysics*, trans. W.D. Ross in *The Basic Works of Aristotle*, ed. Richard McKeon (New York: Random House, 1941), 833.

<sup>6</sup> Ibid., 779.

<sup>7</sup> **Error! Main Document Only.**πολλαχως λεγομενον, See Heidegger, 12.

<sup>8</sup> Jonathan Barnes, “Metaphysics,” *The Cambridge Companion to Aristotle*, ed. Jonathan Barnes, (New York: Cambridge Univ. Press, 1995), 76.

<sup>9</sup> Heidegger, 35.

## 2. Chapter One: *Metaphysics* Θ 1. The Unity of the Essence of Δύναμις κατὰ Κίνησιν, Force understood as Movement

In Chapter One, Heidegger shows us how δύναμις and ἐνέργεια extend further in their meaning than the corresponding expression κατὰ Κίνησιν - with regard to movement. When we speak of forces and activities in the plural, we mean that there are many kinds of forces and activities. But the δύναμις and the ἐνέργεια in the singular mean an extending “further” in the sense of something higher and essential, and this Heidegger calls the “decisive basic discovery of the entirety of Aristotelian philosophy.”<sup>10</sup>

Heidegger arrives at this by first asking how we discern a force. Forces are not directly discerned. We always find only accomplishments, effects. Nor do we ever experience something immediately as an effect. After a circuitous discussion of causality, we find that the access to force must be co-determined by what force in itself is. Force has the character of being a cause (Ur-Sache), an originary thing (Sache) which allows a springing forth. This insight, Heidegger tells us, Aristotle saw in a decisive and essential moment.<sup>11</sup> It is this essential Aristotelian insight that Heidegger says must be set free in its essential content. What is at issue here is not a cause and effect relationship, but rather much more: force is an origin, the from-out-of-which for a change, and in such a way that the origin is different from that which changes.

Heidegger advances the guiding meaning of force by discussing two modes of the from-out-of-which for a change—bearance and resistance. One way of being a force is namely a force of tolerating. The other way is the behavior of intolerance against change for the worse. The from-out-of-which for change now is that from out of which change is allowed, or else that from out of which change is resisted. Heidegger then is able to say that being an origin is for a doing, that is, a transposing pro-ducing, a bringing something forth or about.

Again determining the guiding meaning from a new perspective, Heidegger says that having the power for something means having in the right way the power to do the task at hand. The power for something properly is force when it is in the right way. Force then implies the moment of being on the way towards something. Hence, there belongs to the inner structure of force the character of “in such and

<sup>10</sup> Ibid., 42.

<sup>11</sup> Error! Main Document Only.Ibid., 67.



such a way,”<sup>12</sup> in short, the how. Being, as being an origin for, does not mean a thing from which something proceeds, instead being an origin for something is in itself a proceeding to the other. In the essence of force then, there is the demand upon itself to surpass itself.

Heidegger next poses a question. When one speaks of the δύναμις of doing and of toleration, are two modes meant or only one? What follows is a discussion which distinguishes between ontological and ontic being-force. In the ontological sense, being-force does not consist of two present-at-hand forces, but rather, there is in a force as present, an outward directiveness toward the corresponding opposing force. In the ontic sense, it does not mean force-being as being, but rather a definite being. We do not mean then force-being itself, but rather that which shares in it. Heidegger wants us to see that Aristotle is telling us that it belongs to the essence of what we call force, that it be understood in this ambiguity. To reiterate, force does not consist of two forces; instead, if force-being is in a being, then that being is split into two forces. This, says Heidegger, represents Aristotle’s successful entrance into the ontological interpretation of essence.

In concluding this chapter, still another version of δύναμις is explained—force in the sense of unforce. This unforce, in turn, is seen as a withdrawal. Does this merely mean that in addition to force there is unforce as well? No, says Heidegger. Rather Aristotle tells us that every force is unforce in relation to and in accordance with the same thing. Every force delineates a realm for itself within which it dominates that for which it is. Every force has a character of possession which is this delineation of its realm. Every force, then, if it becomes unforce, is the loss of its possession. Thus the proper possessive character of force is constitutionally bound up with withdrawal.

\* \* \* \*

### **3. Chapter Two: *Metaphysics* Θ 2. The Division of Δύναμις κατὰ Κίνησιν for the Purpose of Elucidating Its Essence**

Chapter two opens up with a division of force into what is without discourse and what is directed by discourse, without conversance and conversant. What does discourse have to do with force? λόγος is discourse, the gathering, unifying making something known. λόγος is thus discourse in the broad sense of the

---

<sup>12</sup> Ibid., 85.



manifold making known and giving notice. Without conversance is to be without the possibility of taking notice, or of giving notice. Conversance is then the possibility of taking and giving notice, and thus the possibility of exploring and becoming conversant.

Aristotle achieves this twofold division of force by going back to a division of beings into soulless and besouled. When we speak of the besouled being who has λόγος, we do not mean that conversance is merely added on; rather, this having has the meaning of being. It means that humans conduct themselves in the way they do on the basis of this having. Whenever this conversance addresses itself to things and discusses them, it is a conversance which debates with itself and calls itself into account. Language is understood here as a conversant gathering. The human being is the living being who lives in such a way that his life is defined in an originary way by language.

Next follows an interesting discussion on the inner relation of force and conversance which Heidegger uses to draw our attention to conversant force or capability. What is characteristic of the latter, in turn, is that it is directed at contraries. All of the foregoing no less comes into play in a discussion of production. Heidegger tells us that the being-gathered-together of production is at play in the gathering of the discussion and of the cognizance that discusses what is or is not suitable. Production is a doing of something and leaving its contrary alone. What is produced is the work. The work is always that which must appear in such and such a way. The outward appearance is already seen in advance, and it is seen precisely in what it comes to in the end. The end is in its essence boundary. To produce something is to forge something into its boundaries. It is the outward appearance which says what is to be produced. It does so in a way that excludes the other, but this other is consistently with it, that is to say, the contrary is there and manifest in the very fact of avoiding it. Producing as Heidegger sees it is essentially a talking to oneself. To tell oneself something means to want to proceed in a certain way, and in effect to have already gone there in advance. Production then is a fundamental posture toward the world, that is, the enclosed openness of beings. Based on the preceding, Heidegger is telling us that when Aristotle uses λόγος it primarily means in its essential character: conversance and openness. Our understanding will be blocked then if we take λόγος in the current sense of the term to mean judgment, assertion, and concept. It becomes then too mental.

#### 4. Chapter Three: *Metaphysics* Θ 3. The Actuality of Δύναμις κατὰ Κίνησιν or Capability

Chapter three finds Aristotle involved in a confrontation with the Megarian thesis. The Megarians hold that the ability to do something is present only while a force is at work, but when it is not at work, there is no such ability. For example, a builder who is not building is not then able to build, unlike the builder who is building. Their question concerned the essence and possibility of movement. The Megarians denied the possibility of the actuality of movement, according to the Eleatic principle of being wherein only being is and non-being is not. What is at issue then is a capability. The Megarian, Heidegger tells us, looked for the being present of a capability in the actualization, that is, in the enactment of the capability. If there is no enactment, then the capability simply does not exist. Both the Megarians and Aristotle are united in their general conception of actuality. Both understand it as a presence. According to Aristotle, capability is present, is actual, if it is possessed. According to the Megarians, capability is present and actual if it is enacted.

For Aristotle, it is manifest that the being present of capability may not be immediately taken as the presence of work, or of production. Rather he sees the presence of capability as possessed, available, as a having. Enactment is never only the emergence of something which before was completely gone. On the other hand, non-enactment is not simply the disappearance of something which was there. For Aristotle, enactment is practicing. It is the presence of being in practice. Because of their narrow comprehension of presence, the essence of enactment escapes the Megarians, which, as a being at work, has the character of practicing. The insight that non-enactment as not practicing in itself is a way of being in practice, and therefore the presence of something, is closed off to them. Thus Aristotle brings into view for the first time the proper manner of being actual of a capability. A non-enacted capability is actual such that a not-yet-beginning belongs to its actuality.<sup>13</sup> Accordingly, Aristotle does not deny enactment as one way in which capability is actual. But he does deny that this is the only way in which the actuality of a force is. To reiterate, the being present of a capability is being in practice. This expresses precisely the innermost actuality of capability as capability. This then is the reality of the potential.

The inadequacy of the Megarian conception lies in that they see incapability only as the mere negation of enactment as presence. They comprehend that which is

---

<sup>13</sup> In utilizing such nomenclature, Heidegger is not trying to improve upon Aristotle, but rather to begin to understand what he has said.



negated, enactment itself, only as the presence of something, rather than as transition. “And so these teachings brush aside movement as well as becoming.”<sup>14</sup> Thus the Megarian thesis must collapse. The being present of capability cannot be sought in enactment. One sees that being capable of something, and being at work, are in each case something different.

That the Megarians relied upon being at work or actualization does not prove that they had a proper notion of it, for they did not see that actualization qua actualization is actualization with regard to movement. To account for the difference between capability and actualization means not to replace immediately the actuality of capability with being at work, thereby eliminating the capability, it means rather to see that capability has its own actuality and to see how this is so. What Aristotle is saying is that the being present of something capable as such and actuality in the sense of enactment are modes of *being in movement*, and are only to be comprehended on this basis.<sup>15</sup> Thus Heidegger can say the “actuality of the capable is co-determined by a capable actuality, which shows up in enactment.”<sup>16</sup> Heidegger impresses this upon us by the example of a sprinter who has taken his



mark in a hundred-meter race. What we see is a human who is not in movement, but whose pose is that of being already off and running. At the word “go,” the runner’s execution is not the disappearance of the capability, but rather the carrying out of that toward which the capability itself drives. The one who reacts leaves nothing undone in relation to his capability. This implies that the runner is in a position to run, that is, in full readiness. He lacks only the releasement into enactment. Thus it becomes clear how the

actuality of capability is to be comprehended through possession, namely as holding the capability itself in readiness. The being held is its actual presence.<sup>17</sup> As Aristotle says, “That which is in actuality capable, however, is that for which nothing more is unattainable once it sets itself to work as that for which it is claimed to be well equipped” ( translated from the Greek, 1047a24-26).<sup>18</sup> With this insight, Heidegger tells us, the greatest philosophical knowledge of antiquity is expressed.

<sup>14</sup> Heidegger, 180.

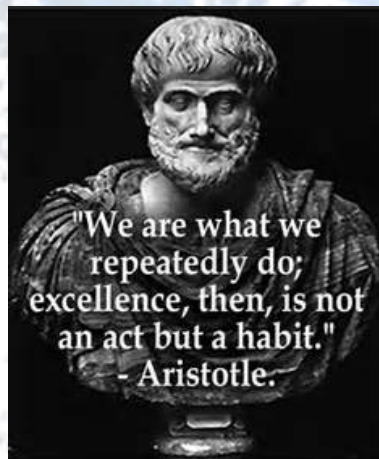
<sup>15</sup> Ibid., 186.

<sup>16</sup> Ibid.

<sup>17</sup> Ibid., 186-88.

<sup>18</sup> Ibid., 188.

The importance of Heidegger's book is that it enables us to see Aristotle with a new pair of eyes and to listen to him with a new sense of wonder. For Heidegger, the primal disclosure of Being was granted to the early Greeks as a kind of manifestness which shortly thereafter congealed into a kind of static presence.<sup>19</sup> The original experience of being was covered over by ontological structures of actuality, causality, and permanent presence.<sup>20</sup> By probing and questioning Aristotle's text, Heidegger shows us how to do philosophy, and in so doing, illuminates the dynamic and fluid processes that lie behind "ousiology" or substance ontology. Although Heidegger's interpretation is a daring and innovative one, it is one which captures the spirit of Aristotle.<sup>21</sup> Heidegger's interpretation also shows us that it is necessary to surpass Aristotle—not in the sense of progression, but rather backwards in the direction of a more original unveiling of what is comprehended by him.<sup>22</sup> If we are to appreciate what Aristotle was the first to achieve, we must then regain an active understanding of the questioning posed by him. Perhaps the most important thing that Heidegger has done for us is that he makes us want to go back again and again to the *Metaphysics*, so that we too can experience, in our own way, what Aristotle was able to experience in those same, few questions. This then remains for each of us to do, in our endeavors to make effable the ineffable.



<sup>19</sup> John D. Caputo, *Heidegger and Aquinas: An Essay on Overcoming Metaphysics* (New York: Fordham Univ. Press, 1982), 84.

<sup>20</sup> *Ibid.*, 90.

<sup>21</sup> Both Heidegger and Aristotle would agree that the ousia of something involves an unfolding (becoming) from being potential to being actual.

<sup>22</sup> Heidegger, 69.



A Psychometric Test by Dr. Greg A. Grove.

Psychometric literature is not rife with inventories, scales, and tests that pertain to aesthetics. What does exist tends to divide itself into two streams of assessment: choosing a masterwork from a forgery or drawing given themes from an aesthetic point of view or choosing the design that best represents a given aspect of visual aesthetics, such as rhythm, symmetry, mood, and so forth.

My ALPHAnu Aesthetics Inventory incorporates several unique touches and domains. You may be interested enough to follow the directions and provide me with your answers. I will follow with a FREE score report. Send your responses to:

ggrove141 @ [aol.com](mailto:ggrove141@aol.com). [Close the gaps between the @ symbol]

Thank you!

Aesthetics Inventory W V \ W \ \ / M / / M / ^ // V / ^ /

Devised by /D\r/.\G/.\G/r\o/v\e/

©MMX

The ancient civilization ALPHAnu was allegedly steeped in arts and crafts. They valued aesthetic intelligence, perceptual facility, and creative imagination. Their early art was primarily a symbolic combination of letters and numbers as we know them today.

A few of their drawings have been collected over the years and are ready to be viewed by the public. But gallery space is limited, so we are asking individuals like you to inventory the following pieces. To enter **Gallery N**, circle the ONE trait in each set that is most highly developed in your life. All of these traits were especially valued by the ALPHAnu:

I.	II.	III.	IV.
accuracy	orderliness	punctuality	self-control
conscientiousness	loyalty	persistence	refinement
appearance	likableness	poise	reliability
adaptability	open- mindedness	pleasing voice	self-confidence
cheerfulness	originality	progressiveness	sense of humor

Underline your favorite ALPHAnu  
color:

green   blue   red   yellow

Name: \_\_\_\_\_

Now, look at each item. Write **L** for *Like* and **DL** for *Dislike* in the spaces provided.  
If you are uncertain, guess.

(1) \_\_\_\_\_:O:Q:

10) \_\_\_\_\_:IV^:T:

(2) \_\_\_\_\_:l:^:L:

11) \_\_\_\_\_:wWwW:y:

(3) \_\_\_\_\_:mZw:

(12) \_\_\_\_\_:4:H:

4) \_\_\_\_\_:6:bq:

(13) \_\_\_\_\_:Cc:sS:

(5) \_\_\_\_\_:S:s:8:

14) \_\_\_\_\_:8:V:5:

6) \_\_\_\_\_:u:nN:

(15) \_\_\_\_\_:!:i:

(7) \_\_\_\_\_:3:o:

16) \_\_\_\_\_:B/./R:

(8) \_\_\_\_\_:u:<:v:

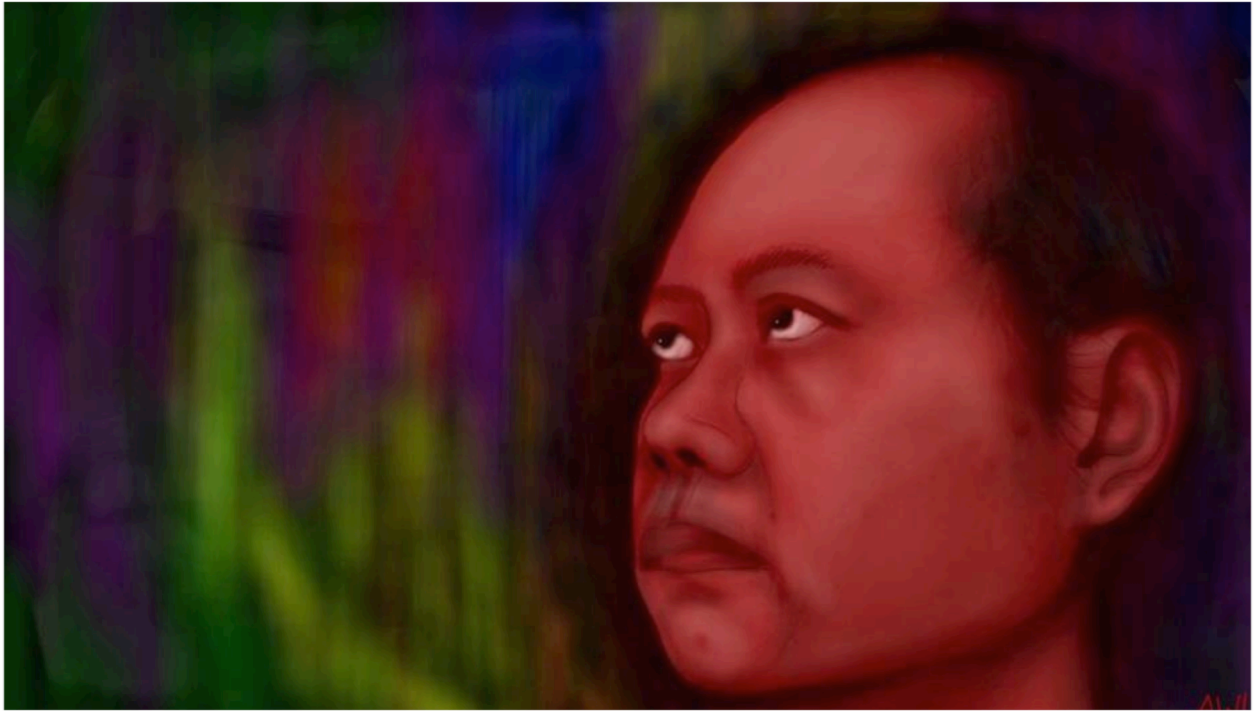
17) \_\_\_\_\_:Z:N:x:

9) \_\_\_\_\_:9.6>>>>9:

18) \_\_\_\_\_:3:u:S:O:



Self-portrait in red and black, by Alan Wing-lun.

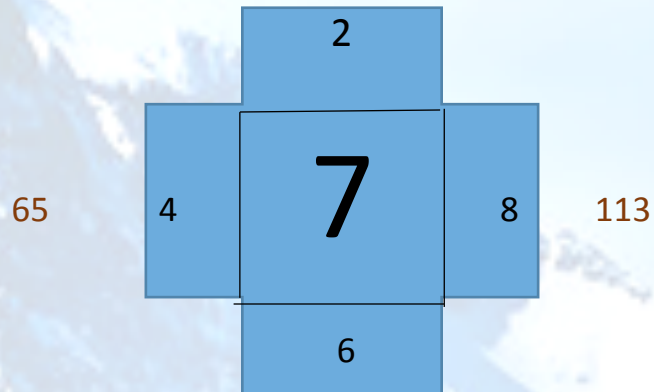


**You become unique  
the minute you realize  
you already are**

## Puzzle Pages

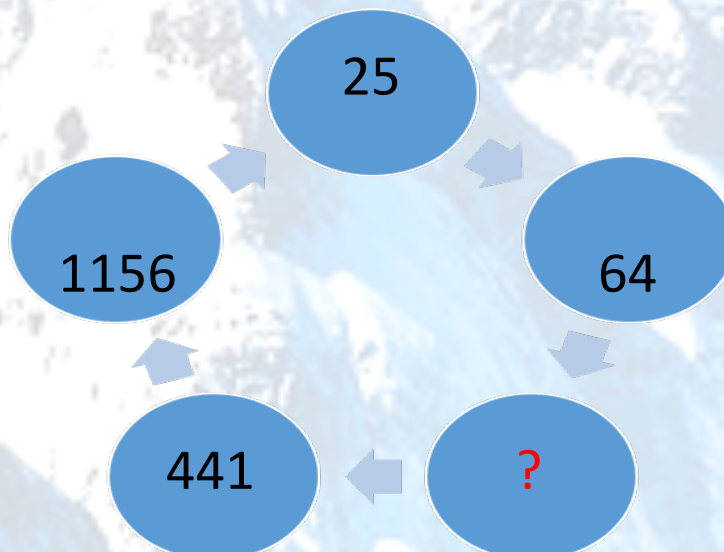
1) 16    22    34  
      23    ?    52  
      39    53    ?

2)                    53

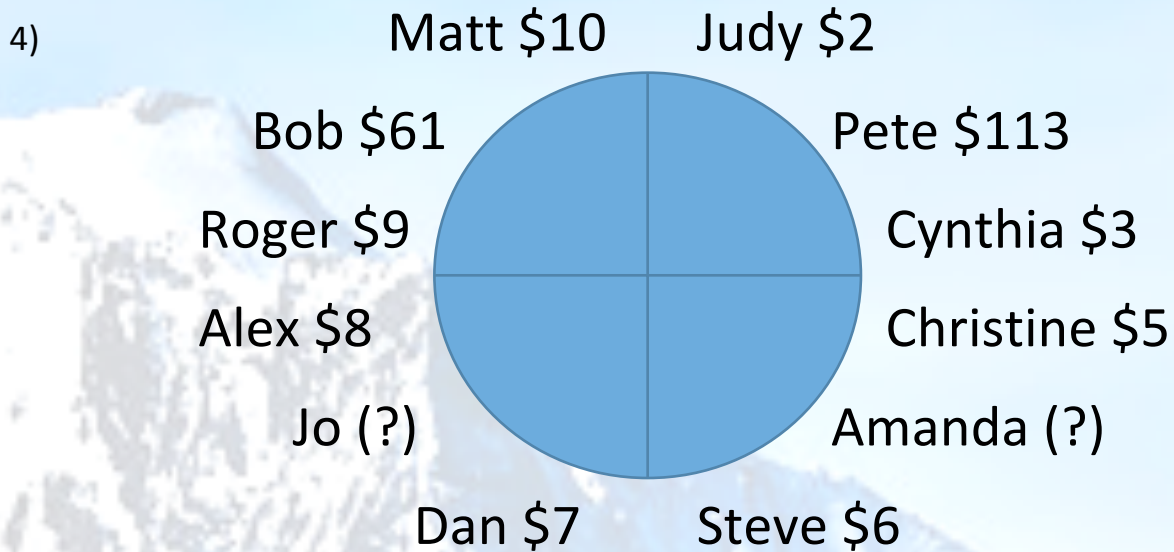


Find the missing numbers in the four puzzles!

3)







Here is a meeting.

The twelve executives earn a certain amount of dollars per hour.

Bob, Pete, Jo and Amanda are on bonuses based solely on their two subordinates' pay.

How much do Jo and Amanda earn per hour?

Who do they work with?

### Quick Quiz.

1. What was the famous astronomer Edwin Hubble's middle name?
2. WIN member Andrew Paul is sitting next to a statue of whom?



3. First published in 1987, who wrote the book "On Ethics and Economics"?
4. What is *musophobia* the fear of?
5. From which country does the word *ombudsman* originate?
6. Commemorated by the Rufus Stone, how was William II of England killed?
7. Connected with the answer to question 5, what were awarded for the first time on 10<sup>th</sup> December 1901?

# The Four Magic Words

by Alan Wing-lun

Can you help me?

Yeah, sure. What's up?

I don't really know  
I just feel sad

You want to talk?

Not sure I can  
I need a friend  
And hear a voice  
Need to feel wanted  
Or just to feel  
Anything other than pain

I hear you, buddy  
What can I do  
To help you out?

Be patient with me  
And hear my words  
Not always making sense  
My days seem dark  
My nights are darker  
Depression robs my sleep  
Deprives me of laughter  
Some days I feel  
There is no tomorrow  
No contemplating the future  
I cannot go on.....

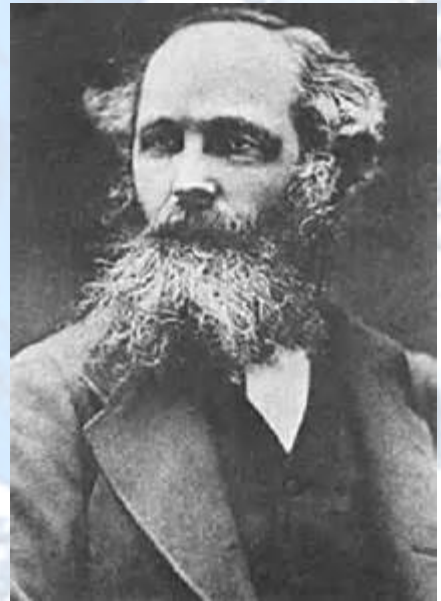
STOP! Don't be hasty  
Times seem tough but  
I'll see you through  
If you need me  
I'm here for you  
All you need is  
The four magic words  
"Can you help me?"



## The Paradox of Artificial Life (Part One) by Paul Peters

*One may say "the eternal mystery of the world is its comprehensibility." – Einstein*

Something you won't often find in the present-day penny press, or add to your ready and prepared repertoire of elevator pitches, concerns the unreasonable effectiveness of mathematics. Obviously part of this effectiveness is related to different variations of the observer effect, we see what we look for and we create and improve the tools that suit best, yet it remains a baffling feat that a simple formula can be accurate up to one part in a million or billion. Although deceptively simple, the gravity law that Newton devised in 1687 is accurate to more than one in a million and we only need to be concerned about difference when looking at the very small or the very large. Devised in 1861, Maxwell's equations determine the strength with which an electron interacts with a magnetic field with an accuracy of eight parts in a trillion, as verified in an experiment done in 2006. As guestimates go, this goes a little beyond a lucky guess. Obviously this has not gone unnoticed and an increasing number of scientists are flirting with the idea that physics is so successfully described by mathematics because the physical world *is* mathematical. Although one can construct a framework to describe what is happening, with perhaps the simplest of constructions being the ability to give some event a name, it appears that "constructability" may have a far deeper reach than usually considered. Instead of mathematics acting merely as a conceptual framework that is helpful in describing events as a complicated system in terms of simpler systems, increasingly accurate approximate prescriptions on ever more fine-grained detail levels are uncovering more hidden mechanisms underlying mathematics. That is, many advances are related to deepening insight concerning the mathematical construction within some physical, chemical or even economical context, without so much introducing new ideas to the context. Nature appears to follow a similar sort of approximations, forming levels at different minimal scales of simplicity, constructions of irreducible sophistication, and in a way the sciences are simply re-discovering these. Rediscovering and reinventing these by reconstruction, and similar to many scientific ideas, Nature has to deal with a vast enormity of non-sequiturs.



It is said that in mathematics you don't understand things, you just get used to them. The exact sciences turn out to actually need a certain degree of vagueness, fundamental fuzziness and often even contradictions. With our bias towards exactitude the focus has been on systematic composition, whereas e.g. poetry often uses the logic of analogy. While mathematics is a mixture of systematic composition and correspondence, the latter has been given little attention besides its role in symbolic representation. While 'the laws' of gestalt theory are widely used in industrial design, no conceptual framework exists yet to gauge the mutual interpretability of neuroaesthetics (of Ramachandran's "Eight Laws of Artistic Experience") and apply these to analogue computations. In other words, there are quite a few different styles of logic still to be uncovered.



In an age when one could still become an expert in a scientific field by spending a night in a library, French philosopher Auguste Comte devised a “hierarchy of the sciences”. Moving from the simplest to the more complex the sciences developed in this order: Mathematics; Astronomy; Physics; Chemistry; Biology; Psychology; Sociology. In this nicely layered model particle physics determines how atoms and molecules behave, and these in turn determine the chemical interactions, which in turn determine the biological characteristics, which determine the psychological qualities and so on. As was the fashion at the time Comte followed a line from transcendence ‘upwards’ to the more tangible humanities at our scale of existence, as if one level is the logical consequence of the other, nicely layered on top of each other in a vertical fashion... just like society was supposed to be.

However intriguing and valuable an approach, it doesn’t seem like the appearance of a minimal structure of a new ‘layer’, that this indicates the other ‘layer’ to seize. Chemistry doesn’t stop where Biology begins. Just like perfume can have a clear impact on someone’s psychological mood, electricity is obviously having a great societal impact, or a road system where a certain degree of Boolean logic is unavoidable, where an entrance-ramp acts as an



Plastic enigmatic: Leonardo Da Vinci's Mona Lisa does not have quite the same mysterious quality in Lego

AND gate and an exit-ramp as an OR gate. The ‘lower’ realms continue to pervade the ‘higher’ realms. We’d be better off by trying to establish some arrangement of the potential reach of a science, and relatively close the old model we can follow a nested hierarchy of emergent constructions mixing the Russian nested dolls with the recursive Droste effect. If we think in

terms of “constructability” instead of “comprehensibility”, with structural and functional minima signifying the onset of emergent scales in probability space, we get a hierarchy that mixes transcendence with immanence; Biology; Artificial Intelligence; Computing; Semiotics; Logic; Mathematics; Physics; Chemistry; Psychology.

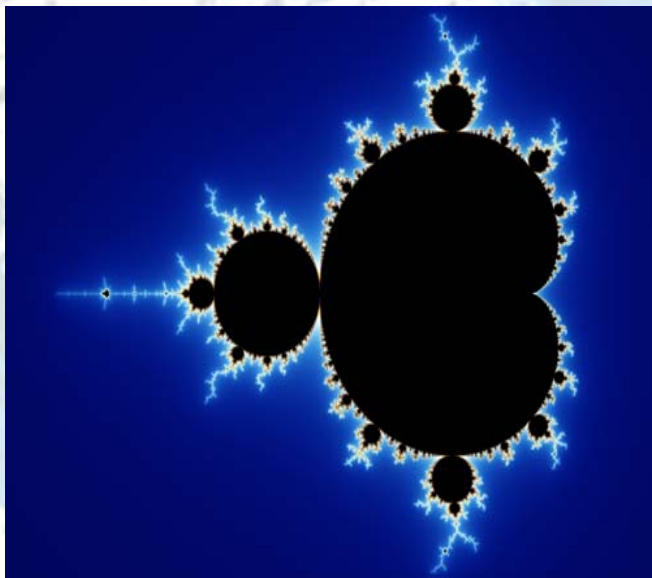
Although this is arguably erroneous to one degree or another, this is simply to highlight the importance of biology. Even though great progress is being made in mixing physics and mathematics, many phenomena in particle physics and astronomy cannot be explained if it were not for insight from theoretical biology. Even if evolution, self-organization and criticality are applicable to astronomy, physics and computing, meaning would be lost if placing these mechanisms outside of biology. The “laws of physics” are better approached as programs or learned behaviours and 3D space actually appears to be out to be one of the simplest complete frameworks that can arise for any kind of systematic arrangement, it is probably the simplest way in which the whole interactive tapestry of objects can organize.



Recent research concerning the self-assembling tendencies of variable amounts of 145 different polyhedra (shapes like a cube, pyramid) showed that nearly 70% of the shapes tested produced crystal-like structures even when their environment was as disordered as possible. Some of these structures were highly complicated, with up to 52 particles involved in the pattern that repeated throughout the crystal. Contrary to the typical idea of entropy, the inevitable tendency towards chaos, even in a mathematical simulation there was no other way than to form ever more complex constructions. If we recognize mathematics as a natural science, life may be an inescapable result of how the universe works.

The insights grown concerning what kind of world we actually live in have been accelerating greatly during the last century and it seems like the sciences have shifted a level of abstraction to incorporate the importance of computing sciences and farfetched areas being mapped out as we study along concern metamathematics, metaphysics and metabiology, plus the difference between these three is growing increasingly blurry. One of the deeper insights originates with theoretical biologist Stuart Kauffman. Set to define the fuzzy edge of chemistry and organic life, abiogenesis, he has been gathering increasing evidence that life initially arose as collective autocatalytic sets, collections of molecules each of which can be created catalytically (the non-destructive agency of a chemical reaction) and by other members within the set, such that, as a collective, the set is able to catalyze its own production. As a reproductive functionally self-sustaining whole of structurally self-sustaining parts, this is a likely arrangement to make the jump upwards to organic life. His insight is particularly important as it clearly shows how individual parts can cooperate in a minimal collective to form something that is “greater than the sum of its parts”. Replication already happens with more simple molecules though, but it needs to be repeatable enough so that this ‘organism’ doesn’t run wild, or deplete its immediate surroundings.

Studied by modern giants like Mandelbrot and Wolfram, we can see such frameworks in the light of different mixes of order and disorder. Too much order and life can’t emerge, and with too much disorder life doesn’t stick. If we look at Nature again, most of earth’s history involved mineral formation until there was such an abundance of atoms and molecules that



life as we know it could evolve. Life had been brewing along for some three billion years before it evolved beyond single-cell organisms, until roughly half a billion years ago evolution accelerated and became as diverse and versatile as we now know life to be. None of the observations really explain why life exploded and it seems that the dynamic equilibrium of habitat and inhabitants grew abundantly fertile enough that when a lower threshold in genetic complexity was reached it allowed for an enormous variety in species to develop. “Quantity has a quality all its own”, as an infamous politician once said.



Life in its organic form seems to have emerged in a similar way on the edge of chaos and order, facilitated by the violent conditions of the early earth, i.e., nearly uninterrupted volcanic activity, and thunderstorms discharging electric currents into the primal soup, and the dominant gasses intermingled in such a way they created the amino-acids, the alphabet of organic life.

Furthering the language of organic life, its grammar appears to have developed analogues to “aperiodic crystals”, a mildly disordered assembly of ordered molecules. Single molecules, although their configuration can be quite information-rich, are too small to provide the expressive power of a grammar, so it had to be a collective behaviour. Pure crystalline format is far too repetitive to express any higher degree of complexity. Any amorphous solid was too chaotic to express anything. So it had to be a crystal with the right mix of order and disorder, and this turned out to be quasiperiodic crystals, with ordered elements held together in a disordered way. Limestone has long been suspected to act as a placeholder for the development of such behavioural complexity in the form of proteins, yet, if limestone acted as memory by preserving a structured imprint, water acted as processor.

When water is not tightly compressed, its outer surface forms a liquid crystal layer. Like glass, it is actually an amorphous solid (too disordered to be crystalline) yet a liquid crystal is a form of ordered fluid. When tightly compressed the minimal energy configuration of water is not to arrange itself as single H<sub>2</sub>O molecules, but it becomes an assembly of five H<sub>2</sub>O molecules, and it will endlessly bond and re-bond so that it is always moving. With its strange properties water amplifies chemical reactivity and variations about a billion to a trillion times. The more we learn of water, the stranger it gets. Water doesn't do what a normal substance does; it is always a little bit different, often with staggering results. If water acted like a normal substance the weather would have probably come to a standstill long ago... but when you put water together in a sea, under the weight of gravity a normal substance would squeeze the lower layers together in an ice format, but not water, no, it actually expands a little so that it keeps the deep sea at a temperature between 0 and 4°C and makes it push upwards. It even seems to match the simplest definition of organic life, a “complex adaptive system”. Although by definition water is not organic life, it is difficult to categorize water, and it would be more suitable to see it as one of the prime building blocks crossing the bridge between chemical life and organic life.



Water may not be the immediate cause of organic life, but it acts as a participating facilitator enabling an extension in utilitarian degrees of freedom. Affine enablement of the nearest neighbour in possibilities, nested complementarity in probability space, or as Kauffman calls it, “the adjacent possible”. Like the evolutionary progress happens in steps, not jumps, a combinatorial reshuffling of existing and newly introduced parts, adjacency, implies that these possibilities do not appear out of nowhere, there is a direct line of sight.



This visibility requirement indicates that for any semi-closed system this “adjacent possible” expresses a dynamic equilibrium between a system and its immediate environment – the system’s potential energy as it propagates through phase space. Entropy, in the statistical approach thought to be a measure of disorder, may be better suited as an expression of the system’s structural arrangements, the “tensional integrity” of its emergent hierarchy as it reshuffles from actual to potential. It is in a simple physical setup that is simply the kinetic energy. Nevertheless, visibility means interaction, and even though something ‘new’ may enter the picture, a system is always in touch with its potential. As a result, potential energy is an active shaping force, and like water, not an immediate cause but a determinate yet unpredictable facilitator, due to the potentially numerous possibilities.

To give an idea of the number of possibilities, the average human body contains roughly 7 thousand quadrillion atoms, 7 billion billion billion parts, yet we still move around as a whole, so there are structural mechanisms in play which greatly simplify how our parts are arranged and coordinated, such as a proposed mechanism for muscle coordination involving low-intensity electromagnetic cellular interactions with a high degree of quantum coherence, along with biomechanical tensegrity. Even though acting on a ‘higher’ level of complexity, we see ‘lower’ level mechanisms being used in a greatly simplified manner. However, if we take a mechanical look at the different ways we can make a step, hundreds of muscles, bones and tendons are involved, and this gives about a billion times more possibilities than the number of atoms in this universe. Even with a coordinating mechanism in place, the amount of possibilities is mind-bogglingly large, but only a very few of these involve a large enough step to break the 8.95 m world record long jump.

If we take a bottom-up approach, sometimes we encounter assemblies with a level of unity that implies a collectively induced coherence, with emergent attractors in phase space. Emergent attractors appear really strange, but they may be what life is about, and as they steer a system’s behaviour towards a certain goal, they seemingly work backwards in time. Sometimes, as with certain forms of quantum error correction, such effects “... cannot be used to go back in time, only to reduce the time between cause and effect a little bit”, although this happens in laboratory conditions which are shielded as much as possible from the rest of reality. However, as every little thing, or event, seems to have its own particular timeline, chains of causal events can split and join, and even though on an individual timeline there is no such thing as retro-causality, consistent with relativity physics the quantum mechanics ensemble interpretation allows for the possibility to connect one timeline’s present with another’s past. As it is quite impossible to measure the collective future, it is possible to measure the influence of events that happened at different times in the past. Some unusual experiments have been performed which indicate that we are, indeed, able to change the past, as long as the particular local timeline is still in a ‘quantum’ state until the observation connecting it with global history makes it definitive, then the outcome can be influenced to some extent. Time may be an illusion, but, like a pair of face-to-face mirrors, the further we look, the deeper it gets.

Just like with quantum-mechanical systems, if you drill down to a too fine-grained detail level you will end up with interference problems and you cannot assign probabilities to such fine-grained histories. The details cannot be detached from each other; even neighbouring probabilities cannot be treated as separate alternatives.

The assembly is a minimal structural whole, with spatial coherence and temporal coherence, a wave. Even though it is composed of identifiable discrete parts like any wave function it loses meaning if you subdivide it even more, leaving you with a caricatured sketch. As it turns out, these quasi-classical coherent ensembles are much more prevalent than previously thought and if we explore the world in a top-down fashion, we encounter these self-sustaining complexes which are an irreducible unit, they cannot be split up any more even though they are clearly made up of individual parts. Most of these 'organisms' have little to do with the subatomic realm from which quantum fields originate, but the approximate framework itself is already reaching up into a realm named quantum biology.

End of Part One.

### Some Random Thoughts, by Graham Powell.

"When the flames of anger arise, you know the position to defend, and that all else is as grounded as the flakes of ash that blow in the wind."

"Settle everything and you will perceive calmness."

"In regular travel, we are predisposed not to carry baggage for longer than is necessary: so, why not apply this during your longer journey through life?"

"Never put spectacles on a bed."

"Living with the spectra of 'erudite wisdom to stupidity' and 'exploration to ignorance' is akin to the spectra of light and other radiant features, their extent often being beyond our ken. We require assistance to see them, to acknowledge them, to comprehend them, and that is the task of the seer and teacher."

"At times we feel as fragile as uncooked spaghetti; that the small elastic bands around us clutter the world, mainly serving as fickle objects that can hurt us; but, put those things together, with the appropriate use of foresight, skill and knowledge, and we can create models that will survive some of the immense forces of nature."

"When the river of life flows with whatever makes you happy, a few grains of bitterness pass without being noticed, suspended in the overflowing sense of well-being."

"Be the star on the outside that you are on the inside. Illuminate."

"Don't just cast a shadow. Be a gnomon: show the way."

"Arrive at the nadir that is Happiness, and your life will have worth."

"There's always time for love, because some things are eternal."

"The optimist sees the maze; the pessimist sees the hedge."



## The Paradox of Artificial Life (Part Two)

Many physical 'mechanisms' pervade the biological world. The opening of a flower is vital for its reproduction, allowing for its own pollen to be taken by small insects or the wind, as well as crosspollination with pollen from other members of its species. Of the several ways that flowers regulate flower opening, maybe the most elegant one uses osmotic pressure. When the first light rays of the morning sun hit the flower bud it heats up the fluids inside the petal's cells making the fluid's atoms jiggle around more wildly. In turn this causes the cells to expand a little and by doing so the fluid balance is disrupted resulting in a negative pressure gradient which will cause more fluid to enter the cells. In other words, the petal-suck in water makes it blow up like a balloon, and as the petal expands it unfolds and opens up the flower bud. Again, we have here a 'lower' level mechanism acting as a controller on a 'higher' level of complexity. If this is the local "adjacent possible", then it is not an open-ended combinatorial explosion, it is a functional arrangement more simple than the structural arrangement would suggest, with enough self-sustaining coherence to have this simple mechanism act as an emergent attractor. Another variation causes the tightly folded DNA ribbon inside the plant's cells to expand and unfold a little, thereby exposing a particular genetic sequence, one that is activated by the incoming light that exactly fits through the opening in the folding structure. This sequence then starts the 'program' to produce the chemicals that cause the petals to open up. Once the sun starts setting, the particular light frequency is absorbed in the earth's atmosphere and doesn't reach the plant anymore, which causes it to cease production of the needed chemical and the flower closes as a result of absence of the stimulant. Like many such mechanisms there is an 'on' switch, but no 'off' switch. As biologists like Prigogine have suggested life is full of these negentropic mechanisms, (thermodynamically open) dissipative systems with a reproducible steady state, like cyclones, hurricanes, living organisms, or convection (concerted, collective movement of ensembles of molecules within fluids). Convection has been widely studied as one of the simplest examples of self-organizing nonlinear systems, self-reinforced spatial expansion by group formation. Even though a population of particles starts out with an equal distribution, evenly smeared out, once the particles start grouping, the larger a group becomes, the more surface it has available to attach to its nearest neighbours. Self-amplifying spatial expansion, just like how most clouds grow.

However simple the workings of such organisms, mechanisms or complexes may seem, the outcome is often unpredictable. When viewed from the perspective of "constructability", as said, many scientific advances are surprisingly similar in the sense that a deepening of the mathematical construct, which in general reduces the amount of work involved, greatly advances the applicability of a science or technology. Wolfram closely relates this common behaviour to "computational irreducibility", meaning that the only way to figure out what is going to happen is by actually performing each step. One of the definitions of mathematics is the study of the systematic composition of patterns, and even though some patterns may originate from a yet unexplored logic, it may be clear that for simple mechanisms and complex organisms alike, the capability of computation is indistinguishable of their potential evolvability. Wolfram and his team have been making a map of the mathematical universe, a





map of more than three million theorems that have been constructed from intermediary theorems and elementary axioms, self-evident assumptions which are accepted as true. Essentially it is a map of all things that turned out to be decidable and provable. Nevertheless: "Mathematics has navigated through these kinds of narrow paths in which you don't run into rampant undecidability all over the place" and if one starts to ask mathematical questions at random, one would soon run into undecidability. The known mathematical universe has paths following branches into side branches, but may face a sudden intersection where separate branches unify and cross over for no apparent reason. When using computing systems to create and explore the space of all possible theorems, one might find new paths and in due course create such a map of the constructible universe. In the space of all possible evolutionary constructs, it is very easy to get complicated results, with evolutionary branches that die down in infinity dullness due to too much order, or branches that explode with too much disorder, or those branches with some harmonious balance, some even capable of simulating their own evolution.

Nature however has more tricks up her sleeve to mix ordering and disordering, and there are many ways in which the direction of development is irreversible due to transitions which have a certain degree of undecidability, such as the first mover at a crossroads with a car waiting at every of the four roads, so that the rule which gives traffic from the right priority ends up in a closed loop with all drivers waiting for each other. Eventually something's got to give and the traffic starts to flow again, but the actual way this deadlock is solved doesn't really matter, as long as it is solved. Besides undecidability, it turns out that there are quite a few of these irreversible 'crossroads', such as granular indeterminacies, uncertainties, incompleteness, indecomposability, unpredictability, intractability, indistinguishability, and even things that are maximally unknowable. Fuzziness and information loss may be quite normal in nature, such as with the interaction between water and crystals, where water's pentagonal shape may grip into a hexagonal crystalline lattice, as far as the structural elasticity is tolerant of such misfits, leading to all sorts of impurities, but, like sprockets with an inexact fit, can still gear up evolution. As the study on quasi-crystals shows, life may very well arise from within the undefined cracks of an incomplete space-filling tiling.

Conceptually, this "constructability" is pretty similar to the "mechanical" "materialist" worldview for which many popular writers seem to blame Newton and Descartes, although its accompanying de-spiritualization is actually a recent mix between the advent of modern economical sciences with Marx's historical materialism, the popularization of psychoanalysis, in spite of Freud's strong distrust of unconscious inner drives and Sartre's bleak and blasé existential nihilism. However, the world of hard science, such as particle physics, is much closer to Alice in Wonderland, Borges' unrealities, Bakhtin's chronotope or Aboriginal Dreamtime. Contrary to modernity's industrialized hope industry, an infinitesimal small number of self-appointed gurus are willing to jump up and trade their front-row seat at this spectacle in exchange for some hard currency. Despite that, if there is something our universe does not deserve, it is the nihilistic fatalism of the stylish loser. We live in a world where inside and outside the science laboratories things appear to move backward in time; where something can reach the finish line before it arrives, yet still cannot arrive before it left; a world where simple molecules can be made to disappear and reappear in a place a hundred



miles away. A world where past events can be affected by future influences as long as their timelines were on different branches with a slightly fuzzy history. A world that gets thicker if you stretch it out. We live in a world where space is a tapestry woven with light and matter as threads and knots, but with noticeable other sorts of stuff, outside this space-time texture, that appear to be everywhere and nowhere at the same moment. A world far more miraculous than anyone could have expected.

Although evolvability, as such, appears to be open ended, the very fact that an organism is self-sustaining, and, in its simplest biological format, a collective autocatalytic set with a structural and functional circuit, means that it is self-delimiting, self-correcting and self-regulating. Especially where the functional arrangement is simpler than the structural arrangement, information about the flow dynamics can spread easier/faster than the flow dynamics themselves, and in order to do so, it must optimize the flow of information across the system. This typically results in an asymptotically periodic behaviour. The system itself, as well as its information flow, displays some tension between two opposing forces: one, caused by discontinuities, is "entropic" and leads to chaos; the other one is "energetic" and pulls the system toward an attracting manifold within which the dynamics is periodic. Outside a vanishingly small region, chaos always loses. In other words, most natural processes are cyclic, with a rhythm of their own, like our heartbeat, nasal cycle, sleep cycles, biological clock or breath, though it can be controlled by will as our ancestors used to be swimming apes. As emergent attractors go, they do seem to be abundant.

If we look at the onset of living systems though, when self-regulation hasn't kicked in yet, studies on natural occurring curves shows that when something spreads on a territory, the curve of territory size versus time is S-shaped: slow initial growth is followed by much faster growth, and finally by slow growth again. Like the periodicity most self-sustaining systems converge to, when path dependence is the prime mechanism, then it turns out the S-curve is universal. The overshoot-and-collapse behaviour is normal for mechanisms with an 'on' switch but no 'off' switch. Toggle-free growth always will have a certain degree of criticality, where function and structure start moving out of phase, one moving beyond a critical point while the other builds up overcapacity due to some form of inward directed elasticity, such as an overheated chocolate drink from the microwave, snow avalanches, landslides or earthquakes. The S-curve is a combination of tree-shaped "invasion" by convection, followed by "consolidation" by diffusion perpendicular to the invasive lines. Zoom in close enough and any interplay between population and environment, habitants and habitat, will show these S-curves. Tree-shaped invasion covers the territory with diffusion much faster than line-shaped invasion, not that the latter does not occur, but its "program" is simply less efficient and is outrun by the forking mechanism. Branching out over different scales will cover an area much faster than following a evenly distributed network of channels. Adrian Bejan has made enormous progress with researching these dynamics, and it applies to just about everything, from the self-similarity of capillary blood vessels, the fractalesque branching of the lungs, river formation, to how ideas spread and how memes propagate through 'the news'. This logic even recurs in our limbs, the bone structure of our arms branches out from one in the upper arm to two in the forearm, to four fingers, creating great freedom of motion, while the four fingers themselves form a unit and along with the "opposable thumb" provide excellent grip. Here the forking cascading onwards along the neighbouring limbs towards a build-up of motional freedom.



Forking is more economical, it provides the most result for the least amount of effort. This sort of economics reoccurs everywhere as a converging goal, and is rediscovered time and time again, as the path of least resistance, the principle of least action, the Hamiltonian, Occam's razor, Leibniz's principle of sufficient reason, or Kauffman's adjacent possible.



In a wonderful twist, this sort of economics allows for emergent attractors, such as with convection. For example, the earth is spherical because it allows packing the most stuff in a small as place as possible, for a minimal surface with a maximum compactness; but this also has the centre of the earth act as an emergent attractor. Out here on the earth surface we're always falling towards the centre of gravity, it ensures that most of our activities happen in a very thin layer above and below the surface; it's not like we can just jump over a traffic jam, although some people act like they can. These attractors also appear on other levels either by natural evolution or by deliberate interference in a system. Even mild forms of joining different systems can cause enough disturbances to change its behaviour, such as with the observer effect where the very act of observing disturbs what you're observing. Subtlety offers some resolve, but as a real-life example, Google has enormous problems of the re-affirming feedback loops of their predictive analysis. Wherever Google's search facilities focus their attention it starts acting as a self-fulfilling prophecy. If a site appears in the top ten on the first page of search results, it starts attracting more traffic which makes it appear more popular and thus makes it appear high up in first page of search results. In a world with limited attention, popularity feeds popularity. This is where personalized search results become somewhat problematic, as Google's commercial model is an advertisement company wrapped around a search engine, so their incentive is to push information towards end-users that is agreeable with their customers, the advertisers... but even without this bias their search and categorization algorithms try to find and suggest information that is thought to be most suitable for the searcher. This is effectively creating a "filter bubble" of self-affirming information and if no-one steps outside to get some more information, it's like living inside a television.

A known characteristic for information-based market segments is that they show unusual behaviour known as 'increasing returns'. Due to the reduced dependencies on physical limitations, knowledge and technologies can be distributed very quickly, e.g. via downloads or television news broadcasts, and due to network effects it creates what is known



as ‘path dependence’, a self-sustaining reinforcing feedback loop. These self-magnifications also happen in the news, international politics, investor communities or fashion industry.

Often without an ‘off’ switch, if left uncontrolled these will eventually burst like any speculative bubble. Yet, these are all predictable phenomena with predictable events on their own timeline, like little programs, machines or organisms. They are only unavoidable if left on its own, but like a balloon with a piece of sticky tape on it, you can stick in a syringe and deflate in a regulated fashion. For economic bubbles, this means that value can be moved into several other industries. However, the modern-day notion of shareholder value has caused most businesses or industries to have lost their natural format. They’re built for growth, and too much growth means they explode, too little growth they implode, but in general, after the sixty-sixth six sigma overhaul, they cannot handle economic seasons anymore.

What happens is that at a certain moment when an industry or market segment is forming, there is a strong interplay between the environment and population levels, habitat and habitants, market and companies, which influences the perceived uniqueness of a service or good. This translates in rarity and imitability. For example, positive rarity is a qualitative discriminative characteristic where an offering is not too far ahead of a highly cohesive market. Negative rarity would imply the offering is so unique within an incoherent market segment it has difficulty demonstrating the value and return on investment, the market is so disjointed that the company has difficulty being recognized as being core-player in this particular market. The latter can be addressed by e.g. solid support for open standards by which the offering gains a variety of contextual settings and use cases which it would not have in its own right. The interpretation flips around in value when an offering’s aim has to deal with e.g. security, such as financial messaging networks, where uniqueness and rarity are positive attributes. Negative imitability would be an incoherent organized offering with quantitative differentiation where sufficiently many equivalent offerings exist on a market dominated by competition, while positive imitability could for example result in de-facto market leadership. To move from above mentioned negative imitability a company can choose to streamline their business and production processes into a well-organized and cost-efficient manner, thus making the supporting organization highly coherent. But overly high coherence leads to an another dead-end, as simple mass-production goes, if the only differentiating factor is price, investing in the newest technology will increase the price so companies like these simple run until replaced by a newer more efficient version.

It serves to avoid extremes, and paradoxically increased competition leads to conformity and the whole population of companies turns into a coherent “swarm ball” where most are doing pretty much the same. When an industry-wide bubble starts to float and loses touch with reality individual companies will start looking closer at their close competition, and usually start mimicking each other’s behaviour and this works both ways. Being a ‘fast follower’ saves out on the costs of being a thought leader, and keeping close to the competition will ensure that if they have a hit with some novelty they can quickly hook into that trend and join the party. But when market dynamics have evolved to the extent that there are only a few main players, then these start acting like a unit. As markets don’t have an ‘off’ switch, when the first companies start to drop-out due to “auto-cannibalization” as their initial business was too far removed from the emergent de facto norm, and they have to swallow double the costs to make the switch, which is when the industry starts to deflate and needs to consolidate in a small number of survivors.



Investor speculation only amplifies these mechanics, as when an industry starts to grow it caused investors to flock towards this industry, and the more investors invest somewhere the more investors it attracts, and when an industry starts to deflate investors will move away, and the more investors exit the more investors exit. As if market dynamics weren't enough, the current investor climate increases the risk for speculative bubbles. Bubbles are normal though, as there is always a delay between anticipation and response, of introducing a product and its adoption, but it becomes problematic when overshoot and collapse behaviour expands beyond its natural elasticity. If investors wouldn't rush out of a bubble, it wouldn't burst at all, but as they try to maximize their investment they will try to linger on as long as possible so that they don't cause a rush out. Trying to win a game that is being defined while it is played, self-fulfilling collective deadlock dominate the current investor landscape. If the market is 'life-worthy', emergent attractors will be at play, and certain phenomena appear to be moving backwards in time, making things happen in the present so it can happen in the future. Or applying some negative logic, emergent unattractors indicate the moment of dissipation, where the disappearances of emergent attractors causing a collectively induced decoherence. Even if happening outside laboratory conditions, as it is functionally more simple than the structure it acts upon, this can only be but a very minor effect, only noticeable in 'how' things happen, and to an increasingly lesser extent, 'when' and 'if'. However, despite its subtle third-order derivative 'jerk' influence, it is clearly noticeable with many investors and company policy makers, in a rather exaggerated way where the positivism variant of magical thinking has become so strong they're simply ignoring other input, like the climate change deniers... Comes to show that logic does not have to be rational, or make sense whatsoever.

Companies that understand these dynamics though, in particular the interplay of perception, expectations, maturity of the offering, fulfilment and obsolescence, can make use of above described means to bypass the usual hurdles when introducing a new product. Apple's introduction of the iPhone and iPad are magnificent examples of a vendor entering an existing market while having such brand recognition they can propagate their reputation into an adjacent market and grab a large piece of the client potential. The Scurve "overshoot and collapse" tendency of a hype or fashion trend is not merely a psychological effect, it is a natural systemic mechanism when a new technology is introduced and tries to 'settle in' within a wider population of related technologies.

Recent adventures in artificial intelligence have taught precise communication may very well be impossible. Ambiguity, irreducible undecidability, appears to be the norm as Marvin Minsky states; *"It is an illusion to assume a clear and absolute distinction between "expressing" and "thinking," since expressing is itself an active process that involves simplifying and reconstituting a mental state by detaching it from the more diffuse and variable parts of its context. [...] We can tolerate the ambiguity of words because we are already so competent at coping with the ambiguity of thoughts."* Once again the strange and intimate relation of order and disorder is at play here, and as a process which is forever taking shape a thought may be a smallest snapshot but is still an event with a minimal duration. For the active listener, participatory communication offers a high degree of mutual interpretability, but without some effort it is easy to get lost somewhere in between vagueness and clarity. Life has this incomplete and unfinished quality that allows magic to happen, as if time indeed works backward to boost a civilization forward towards fulfilling its potential, as if many of the

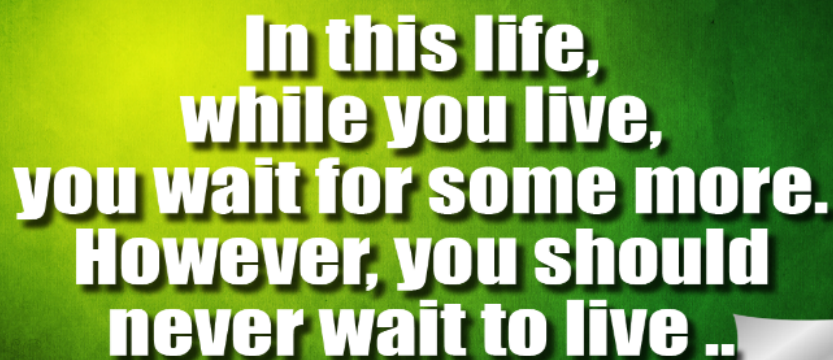


“emergent attractors” combine here in irreversibility time-like structures, of events that have to happen.

If there is a lesson to be learned from recent science, it is that “life wants to happen”. Life is unavoidable; it is woven into everything, even into complicated mathematical constructions. Although one can try creating a hierarchy of sciences, the boundaries are blurry and ambiguous, but it is clear that beyond the Kantian approach lays a world where all logic reasoning is an organization of analogue computations of a reduced biomimetic composition, not necessarily rational.

A vision that started arising in the mid 1960’s, around the time of the robotic arm started to become adopted, already a decade after the birth of ‘artificial intelligence’, was that “the factory of the future will have only two employees, a man and a dog. The man will be there to feed the dog. The dog will be there to keep the man from touching the equipment.” This is not happenstance, or an unforeseen utility, this is an emergent attractor that is going to happen sooner or later. Western society has been trying to shift towards a service and knowledge economy since it became clear manual labour started to demise. With offshoring, many manufacturing tasks have moved to China while much many ICT services have moved to India. This has allowed them to jumpstart their economy towards a Western level with an amazing speed. But the next phase is already happening, and in ten years from now robotics, either physical or software-based will be replacing many of the jobs made possible now, and competitive forces do not allow for an exit. In that sense Western society has also offshored future societal problems to China and India, and as Europe’s aging population seems to prepare for a slow retirement, it is up to these societies to come up with a solution. It is not just that China and India own the future, the future owns them.

This article is written without an executive summary on purpose, if you got this far, by now it should be clear that although we cannot fully predict the future, we can invent it.



**In this life,  
while you live,  
you wait for some more.  
However, you should  
never wait to live ..**

Poem by Therese Waneck

Those Lasting

I remember a sadness  
I wept for the want of you  
The ocean orchestrated oracles  
The sea sizzled such sweet surrender  
The earth circled encompassing ages  
Turning timeless pages  
An eternity of stars softly shone  
As meteors flamed falling  
Until a fire died ignited by passion  
Everlasting in eyes etched and carved  
On our moon  
A face now remote though alive  
With remembrances of the mortality  
Of our infinite love buried  
In unknown ground graven  
Still secretly alive and without perception  
Those lasting marked us with flowers...



## The Banality of Austerity by Paul Peters



Day after day, people previously unknown enter my living room via television news and online newspapers, spelling out what to think and what to be outraged about. Forever engaged in commenting on the most recent news, in rapid succession “the economy”, disasters, politics, wars, and sometimes even a “soft news” item such as sports (most often football or a seemingly remarkable activity of some little known celebrity) all are oozed in our general direction.

More than a century after the invention of public relations, it appears the ideas and techniques of Ivy Lee and Edward Bernays have all but disappeared. While the internet is flooded with astroturf to try and create the impression of grassroots which jumpstart a viral marketing campaign, many a manager has spent some potential quality time on studying the works of a thousand and one management gurus: Sun Tzu’s “Art of War” mixed with some Machiavellian posturing, and to top it off, a patina of Neuro-Linguistic Programming.

The Italian word “furbo” signifies mental sharpness as well as cunning, and just like the English “clever”, it does not equate to intelligence, or the power of reason, but to the ability of being shrewd - sly as a fox. While Bernays laid out ingenious plans on manipulating public opinion for political and commercial reasons, Ivy Lee advocated honest communication together with positive action instead of putting “lipstick on a pig”. Although both approaches are actively participating in shaping the news, irrespective of any artificial intent, surely the way of trickery has a tendency to “go viral”. Two observations from the past come to mind here: Mark Twain’s “If you tell the truth, you don’t have to remember anything,” and Nietzsche’s “I’m not upset that you lied to me, I’m upset that from now on I can’t believe you.”

It may be obvious what the risk is involved with trying to blind the public eye, even when the latter is wearing blinders. But what happens if someone was not lying, but their truth has become outdated? What happens if things done with the best of intentions turn out to have negative side effects? (Such as DDT, which saved millions of lives, but at the same time lay as the cause of chronic toxicity leading to diabetes, cancer and even affected semen quality. Likewise wheat and refined sugar provided food and nutrition for the world but also cause chronic infections, which lead to obesity, cancer, arthritis and depression.) Modern sweeteners even cause age-related diabetes with people in their twenties, while research also suggests that Alzheimer’s disease is caused by chronic inflammation which has the researchers labelling it as “brain diabetes”.



Surely poisoning humanity was not a top-listed objective when ‘anti-cholesterol-ism’ became an influential meme within our culture industry. Even more painful to confront is the 1985 Live Aid initiative, where people stood up to gather funds to do something about Ethiopian famine with a global audience of some 1.9 billion people, and nearly \$300 million was collected. As it turns out, much of the money was used to wage six more years of war, killing about as many people as were saved by the aid, while most of the food was left rotting in the harbour. What exactly happened is still unsure and controversial, but at least it did cause foreign aid to be taken a lot more seriously than before. One has to admire Geldof for his courage in keeping going and creating meaning where there was none. He might as well have written a song entitled “I Don’t Like The Rest Of The Week Either” and withdrawn into obscurity.

Many such ambiguities lay at the roots of many an oligarchy, likely amplified by the use of game theory in strategic human resource development. Contrary to what is now known, game theory assumes people’s actions are entirely motivated by rational self-interest. While even the hero from “A Beautiful Mind”, John Nash, has further nuanced his early work in such a sense that he is essentially stating that game theory only works if one sticks to the rules of the game, it does not seem that these and other findings which support innate altruism have found their way into the economical sciences and organizational psychology. In other words, decades of management training have been acting on the wrong assumptions of what makes humans human, promoting an unhealthy sense that one’s best interests are at odds with nearly everyone else’s. This has led to both learned helplessness and learned egotism with the very people who were supposed to enable plus support others in doing their best.

Luckily life isn’t all that black and white, but when only 10% of people need to believe some meme for it to be regarded as common sense, it should be clear that we have not fostered our cultural hegemony to live up to its potential. While organizational hierarchies already have a tendency towards a “rule by the few” (due to delegation and thus specialization in the information control and work flows) on top of that we get shared secrecy as a sort of corporate or private “reputation management”.

One such uneasy inconvenience concerns modern financial trade. Most trades have become automated and are done by computers which can perform tens of thousands of trades per second. Even though these so-called derivatives do not involve buying real, physical goods, and thus have no direct impact on a good’s price, the indirect effects on the perceived value of goods are still unclear. Derivatives are “mark to model” instead of “mark to market” where valuation is determined by financial models rather than by being based on the current market price. Arguably “the market” is a model as well with idealizations of its own; yet derivatives make it possible to assign monetary value to e.g. the weather, war and peace, plus interest rates or currency exchange rates, and it allows anticipatory adjustments to changes in supply and demand so to more effectively deal with systemic delays.

For example, a cold winter involves increased demand for heating oil and wood, which ideally need to be prepared, distributed and purchased beforehand,



especially when situations are so extreme that normal means of transportation become impossible. By using derivatives it becomes possible to finance such initiatives upfront, in a similar way that an insurance company compensates for the risk of a loss. When derivatives were standardized and introduced in 1973 at the Chicago Board of Trade they were a real improvement. Nowadays, nearly forty years later, the world seems caught up in a web spun by derivatives, a self-sustaining race condition which nobody intended or even understands all that well.

In 1976 the New York Stock Exchange introduced the fully automated Designated Order Turnaround system to electronically route smaller orders; and in 1978 the Intermarket Trading System was adopted to provide an electronic link between the NYSE and competing exchanges, enabling brokers to access all markets. Those were real improvements at the time, providing much better accuracy and security. But we are now three and a half decades on, and technology has dramatically improved over that time. Not only do we have the several 'laws' that continue to accurately predict the major technological trends. A study published in December 2010 of the "President's Council of Advisors on Science and Technology" demonstrated that a speed gain from algorithmic improvement by a factor of 43,000, was benchmarked over a fifteen year period for production planning tasks. This indicates a doubling in efficiency every year due to ingenuity. So we get the following 'laws':

1. Moore's: Doubling of affordable processing power every two years.
2. Nielsen's: Doubling of high-end network connection speed every 21 months.
3. Kryder's: Doubling of affordable magnetic storage density every year.
4. Grosch's: Computer performance increases as the square of the costs.
5. Ingenuity: Algorithmic improvement doubles efficiency every year.

In 35 years this means programs are some 30 billion times more efficient, with an increase in processing power nearly 200,000 times, on a network which is a million times faster while possibly dealing with several billion times more data, and all this for less costs than the investments done in the 1970's. Considering the influence algorithmic improvement alone already, a computerized process that took a year back in 1976 can be done in a thousandth of a second in 2011, and on top of that we get all the improvements of computer hardware which also reduce a day's work to a sub-second bleep. Even when using an electronic trading platform, on a per-second basis more trade is being done now than on a whole day in the year 2000. However fast it may be speed continues to be imperative as the result often translates in a win-lose situation where a stock may not be available anymore if one is just a fraction too slow.

During the last ten years the yearly derivative trade surpassed the value of all the world's goods and services trade, as well as the entire world's wealth, and with an annual yield averaging 30% per year for the last decade, derivative trade appears to be more lucrative than most other forms of business.

Surely it is more profitable than the much-advocated angel funding for start-up businesses where the large majority of institutional investors actually perform worse than pure chance, and this has worsened during the last decade.



And with the ongoing crisis where risk averse policies at retail banking cause every prudent midlevel bureaucrat to inflate their sense of importance by enforcing surreal requirements that no real person or small company could adhere to, one has to wonder where these investors get the acumen and common sense that make them so profitable on the trading floor. If large funds are so bad at judging the evolutionary potential of a start-up, how come they do continue to perform well in the stock exchange? Evidently some very smart people have specialized in quantitative analysis; but “business intelligence” and “decision support systems” emerged in the early 1960’s already and matured during the 1980’s so what can it be that makes specifically modern trading so profitable? One has to wonder what one is actually trading in such a short amount of time, or more specific, what is it that initiates a trade event? Clearly in most cases the goods themselves are not being traded anymore, but mere information that is in some way related to it. Yet, it cannot only be the motions on the trading platform itself, as this will quickly lead to a series of collective deadlocks with one trader waiting for the other and vice versa. Also, it cannot be limited to the publication of corporate financial results and governmental key statistics, or any analytics coming from rating agencies, as for anyone willing to pay for a number of subscription fees this sort of information is freely available, and any differences in interpretation would quickly even out in a collective steady state, which, as a predictable pattern in the trading platform’s motions, can be detected and compensated for. It seems to be both, and a little more, investors appear to initiate trading based on the latest information and try to utilize the resulting dynamics before things die down again. Investors appear to be trading the news.



“Derivatives  
are financial  
weapons  
of mass  
destruction.”  
Warren Buffett

Even though in Europe and the USA the middle class has been shrinking while the lower classes have experienced wage repression since the early 1980’s, with the rise of the BRIC countries the global middle class has been growing significantly resulting in an increase in global consumption and global capital as every developing country hurries onward to a Western standard of living with comparable levels of prosperity. But even when focusing on a few bright spots such as China’s rise to being the world’s leading economy, along with wealth concentration, that only accounts for half of the 30% annual yield of derivative trade. How come the derivatives market has grown to some 30 times the size of the world economy, or more than 10 times the world’s wealth?

How can there be more money than there is money? Undeniably, certain qualities are unquantifiable but it is doubtful that derivative trade is a manifested token of appreciation. Something doesn’t add up, and it appears to be the news. In the idealized world of ‘the market’ information, money, goods and services flow freely



and instantaneous, all consumers always know everything about everything, even the likely outcome of all future events, and will always make the best rational decision concerning buying something. On a global level supply and demand will always self-organize to reach an equilibrium state through an emergent spontaneous order. In normal systems however, the information flow often acts in support of the control flow so that processes acting on the resources happen when they should, the information flow about the system resource flows act as a regulation mechanism. But in a system as “the news” it is difficult to disentangle the meta-relation of information *about* information, just like the value of money is effectively expressed in terms of money, making it its own self-referencing nested complement. In other words, money is used to describe the value of just about everything, but the value of money itself can only be meaningfully expressed in terms of the ‘everything’ it values. Likewise, with “the news” a level of irreducible complexity is reached, with a fundamental ambiguity of multi-interpretable events. Not only do automated trading systems primarily use physics-based simplifications to construct an idealized picture of the world, so to be able to react as quickly as possible to any changes to the news, but it does so with events of irreducible complexity, events which are in the process of happening, events of which the consequences may only become clear decades from now. Even though an individual investor may compensate for the price changes due to their own actions, can they compensate for the indirect changes in the resulting actions of other investors if they don’t know the intricacies of their trading systems? On top of that, investor’s actions are reflected in the changes on the trading price on the exchange platforms which are reported in the news, both in a general manner or sometimes highlighting individual cases. Here, with two seemingly uncontrollable indirect feedback loops, we get to the core of how, in an indirect manner, a seemingly objective means of passive investment has started shaping the course of events and sometimes even dictating it. However ingenious these trading systems themselves are designed, consider for instance how awe-inspiring clever DNA is constructed and then consider that humans share half their DNA with bananas, then how smart are they really? We may be ruled by ants. If you ever wondered why ‘the market’ seems to act like Wile E. Coyote on steroids, this may be why.

Derivative trade allows an investor to be more profitable by dealing with the impression of some good becoming scarce or abundance than the actual event happening. As most traders keep an eye on each other whatever one investor does is mirrored by the others, and they start acting in a collective manner, a swarm ball, and beyond a 10% adoption rate any speculation quickly becomes “common sense”.

Even if dealing with impressions and trying to compensate for indirect observer effects (as with front page news getting more attention making it front page news) these memes or factoids are propagated through the news and simply become the new norm. That is, if 90% of investors speculate a rise in the oil price, this turn drives up the price, because people expect it to. Whatever assumptions underlie the trader’s actions on the marketplace they appear to resonate through in the real economy via biased information provisioning.



Whereas most economic ties and supply chains are primarily local and proximity-based, still the news is full of “the market”, and just like with one-to-one or few-to-few trades “the market” is primarily used as the default choice of objective criteria for principled negotiations, making it a general reference point, again with unintended indirect value resonance. It is no wonder most public companies have cultivated a quarterly accountancy panic with employees looking at short term results at the expense of their own long term success. And now the same has been happening with governmental policies, considering the sad truthfulness of envisioning a two hour presidential speech with expert-level tongue twisting tiptoeing around to avoid bumping into any imperfectly formulated statement to which the stock market can go stampede, enter in a collective phase-lock and cause a rapid succession of flash crashes even before the Q&A session can be used to clarify anything. Politicians are forced to live up to the imposed cartoonification of their public image. Even if neutral information provision had not been an exceptional luxury, most facts are meaningless unless interpreted and while modern-day news appears to be dominated by opinionators trying to provide us with readymade understanding, essentially economic sciences are an ongoing exploit trying to grow towards higher degrees of exactitude. The models are simply too simplistic, and unfortunately the map is the territory. Unless we reach a stage where trading platforms are smart enough to have no need for excessive simplification anymore, when they can quote Goethe as saying “Treat a man as he is, and he will remain as he is. Treat a man as he could be, and he will become what he should be”, which can be expected sometime between 2020 and 2025, what remains for now is a very hazy picture. So hazy that one has to wonder if we are not trying to create a “free market” by assuming things work like that, but in reality it is a gross and possibly harmful simplification. A simplification we cannot escape from, as it is a collectively self-perpetuating race which developed by accident and no individual participant can exit it without suffering irreparable damage.

Recent research showed that most investors are betting against “the Euro”, which may be personal preference or simply the models they are using. A rather not so convenient detail is that many economic theories only work in times of scarcity. In times of abundance people, and thus the economy, start behaving in unpredictable ways, displaying unselfish and humane behavior with irrational elements such as hope, trust and vision. Yet when an economy goes through a Schumpeterian “creative destruction” cycle because certain parts of the economy collapse, the resulting short-term behavior is pretty much predictable, so as an investor that deals with thousands of fleeting micro-investments the chances you’ll make a profit are much higher when you bet on a predictable course. Apparently some eight, nine out of ten investments are “negative” in the above mentioned sense, and as the stock market is reflected in the news, and most of what read, see or listen to nowadays has been molded towards a sort of accountancy, ideologies or other value systems have nearly completely moved away for a report on the motions of money. As “the news” has taken on the role of the “parliament” already a century ago, not only the politicians themselves have become two-dimensional but as people unconsciously anthropomorphize



everything, they have come to embody and represent the whole of a country's role in international politics. And so we see the Southern countries being bashed by a Germany demanding for "austerity", while in reality Germany is not the leader in the EU, the EU is non-hierarchical so that it can form a confederate or a syndicate when needed. Germany, although in a typical Northern-European fashion they are quick to point out the weakness in the process, is only pleading for "austerity" in a rather impersonal cooperative way. Germany has been applying many "austerity" measures for the last ten years, and regarding the Southern countries as an equal they expect them to do the same. There is no place for nuance when dealing with the newest of the news, and although "austerity" may help to some extent, it is simply a predictable "negative" approach as dictated by the market, by a long chain of short-lived short-sighted twitches which have caught us all in an unintended rule of "economic fascism".

"May you live in interesting times"... Were we to believe the mind numbing grind that passes for common sense, we would surely miss out on the magic of every day. Sure, a lucky surprise is easy to recognize as a miracle, but it takes a keen eye to see the wondrous in the mundane. Perhaps it are the enduring influences of Etruscan society where time moved in multiple directions, primarily from past to future, and sometimes from the future towards the past, but Italy's past holds the keys to many futures. Although it seems to be the imposed norm since the introduction of commercial television, little of the defeatist fatalism of a predestination oriented society seems to stick to Italians although like everywhere pessimism is used as a general excuse for inaction. Nevertheless, with customary expertise in the gentle art of not saying 'no', contrary to the Northern tribes it is considered rude to violate someone's worldview by pointing out the seemingly obvious. Anecdotal evidence has us believe the bumblebee is incapable of flying, as for a long time it wasn't clear how the aerodynamics of its little wings could support a body of its size, weight and form. Unaware of being the subject of such controversy the bumblebee simply continues to fly, eat nectar and gather pollen for the young. Not held back by presumptions on what can and cannot be done, if a situation becomes impossible, many Italians will do the impossible.

One of the gems hidden in Italy's recent history is laying the foundation for the invention of the personal computer. With a healthy obsession for design, former typewriter manufacturer Olivetti was able to harvest ten years of knowhow with scientific and commercial mainframe computer systems during a period of organizational and financial troubles and launched "Programma 101" in 1964. It was the very first desktop model, a programmable calculator.

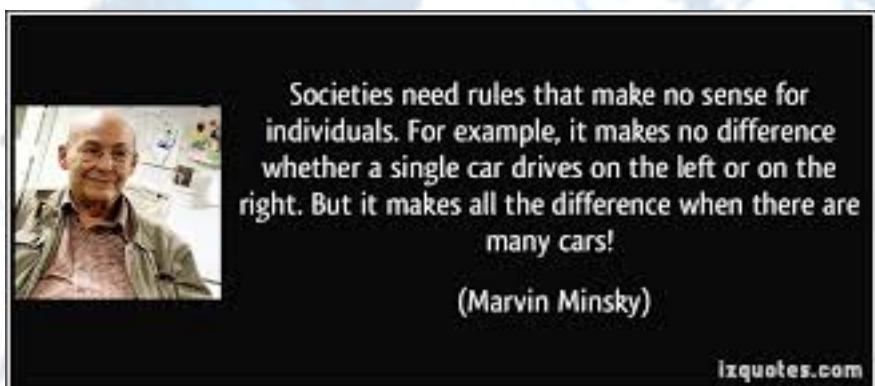
Some twenty years later Olivetti set the European standard for "IBM compatible" personal computers with the M24, followed by the 1995 "Envision" multimedia PC which was simply too far ahead of its time combining a computer with advanced audio, video, fax and telephony features. With unfavorable market conditions this meant the end, but nevertheless Olivetti had taken computing devices out of the basement and given them a place on the desktop.



Late 1968 the "Mother of All Demos" revealed the "oN-Line System" built at Stanford Research Institute, which featured many of the functionalities we are now starting to consider as normal, such as a mouse, network computing, graphical user interface and videoconferencing. These efforts later turned into the Xerox Alto as revealed in 1973 at Xerox PARC, which in turn inspired the IBM PC and the Apple Lisa. Like many of the endeavors in Silicon Valley up to the late early Eighties, the NLS was built with military funding, but with the shift towards 'free market' dynamics and commercial funding, increased pressure for profitability via an increasingly restrictive license model resulted in the 'free software movement', which tried to keep this important evolution free of obstructions. It is important to understand the role of software in the success of personal computing, before software if one wanted to use a text editor, a card game or a flight simulator, it was essentially a replaceable piece of hardware circuitry, a read-only memory cartridge, which contained the 'program'. Temporary information was contained in the computer register, and could be written to an external storage device, such as a magnetic cassette. The introduction of random-access memory changed all this, instead of loading a program from hardware circuitry software could be used to make the memory region look like the same way like the cartridge.

Surprisingly, despite the ingenuity and style resulting in global trendsetting designs in all corners of the ItalPetroliCemeterioTessileFarmaceuticoMetalmeccanicoChimico industrial complex, despite the often total commitment to the highest quality, and despite a large many people of the highest integrity, Italian business ethics appears to be a work in progress, every now and then resulting in a borderline obsessive compulsive display of sly mischief, as if to collectively compensate for all the good things Italy has to offer. It may be that because it is so noticeably needless compared to the excellence in other realms of human endeavor that it appears so embarrassingly grotesque although that of course adds to the magic and mystery, similar to the Buddhist pantheon where the most benevolent gods have the scariest and intimidating outward appearance, so to at least ensure some level of serious attention. Maybe such an imperfection is advantageous, like copper wire conducts electricity much better if some impure atoms are present. Maybe this is what happens with good people after centuries of being governed by powers that violate their need for self-determinacy, or as the sociological studies say "amoral familism" due to a strong family identity and weak national identity.

Highlighting just the last ninety years, Italy's political landscape has been dominated by a megalomaniac theatrical fabulist who





in all probability kept up his paranoid corporatist juggling act by daily consumption of “Forced March” cocaine effervescent tablets, and when Il Duce finally fell from grace instead of handing over the governmental reigns to the communist Italian partisans who were the ones who had fought for it, at the onset of the cold war it was considered vital to avoid the rise of Italian socialism, and although less popular, the winner in every election for the next fifty years would be the Christian Democrats. Even though Italians themselves were no great fans of the fascist movement, Mussolini had been greatly admired by people like the political and financial elite of the time, gathering praises from icons like Freud, Edison, Lenin, Trotsky, Churchill, Roosevelt and even Ronald Reagan. At the time it was common to believe that “manufacturing consent” was useful and necessary because “the common interests”, the general concerns of all people, “elude” the public. The public was thought to be not follow reason but faith. And this naive faith required necessary illusion, and emotionally potent oversimplifications, to keep the ordinary person on course. Such indoctrination was thought to be at the essence of democracy as otherwise the common people would not submit to civil rule and constitute to a civilized society. Obviously Fascism hadn’t failed, the Italians had failed Fascism, and the Anglo-American interventions in Italian politics therefore had little issue with keeping intact much of the fascist power structure by sponsoring a clandestine “stay-behind” army, while also reinstating the Sicilian mafia for their help with the Allied invasion of Italy and granting them a monopoly on cocaine trade, some forty years before widespread usage became problematic. Besides, better have some responsible loyalists in place to guarantee payback of the many millions of dollars that Mussolini had borrowed from JP Morgan & Co. Wars don’t come cheap these days. As the establishment of the Italian republic had been the result of maintaining the organizational structure set up as a satellite nation state of Napoleon’s French Empire anyway, most Italians don’t have a highly developed sense of nationalist pride, of course not to be confused with the deeply rooted love of home. Italians’ attentiveness to others has resulted in so many double standards that Italian ethics has become holographic, yet that is not necessarily hypocritical, it only became so when government policies assume people are cheating, sought to compensate for that, and as a result started forcing victims to turn into perpetrators. In particular tax avoidance has grown into a national sport, but with the amount of taxes to be paid in Italy that has become the only way for a company or citizen to survive.

Whatever it may be, Italians are far too forgiving of each other’s flaws, and that is not really efficient as far as filtering out the wrongs go. It may be an acquired taste, but once one sees that Italians are unified by their diversity, things start making sense. As pioneering scientist Marvin Minsky realized; “What magical trick makes us intelligent? The trick is that there is no trick. The power of intelligence stems from our vast diversity, not from any single, perfect principle”. It is as if Italian business conduct is a way of letting off steam, Italians are not just creative in an exploratory way, but when they do create something new they do it very well.



With their quality focus, ingenuity and personal integrity, it is as if there is no place for too many impurities there, and it concentrates itself there. Without the politics Italy is a pretty close approximation of heaven on earth. Mostly the “furbi” is just ignorance anyway, as with Gramsci’s cultural hegemony, where the worldview of the ruling elite becomes accepted as the cultural norm, the dominant ideology which justifies the social, political, and economic status quo as natural and inevitable, perpetual and beneficial for everyone.

The dominant ideology is the ideology of the dominant class, and one only needs a 10% adoption rate to get there, for entrepreneurial Italy that means that only 0.3% of the population needs accept some factoid to make it “common sense”. The thing is that Italy doesn’t have a ruling class. Italy is the name of a country, a geographical region, but not a nation, and although its public administration employs nearly 10% of the population about two-third involves local governments, education, healthcare, police and military. It is actually the one-third remainder, with the state’s civil servants, where the power struggles occur which is clearly visible in the geographical bias as the Center and South provide the majority of employees, and as much as 90% of the “dirigenti”, the first and second level ministerial senior executives. A little less than 4000 people are “dirigenti” and intermingle directly with the central government, with the Italian parliament which has some 945 members spread over senate and deputies. This is less than 0.1% of the population. This is not a ruling class. This is a small bureaucratic collectivist pact of self-appointed opportunists pretending they are ruling with a few well-worded slogans, while in fact the Italian people are ruling themselves with thousands of different solutions. It is no wonder that “fare i furbi” doesn’t work, as no one in the parliament seem to be working either. No wonder the current power struggle seems to center on a professional clown and an amateur joker. Then again maybe ethics work backwards, like Etruscan time does, and it is the precursor of increased openness and a natural tendency to fight blind obedience to authorities that do not particularly deserve solidarity.

Philip Zimbardo’s renewed research on “time perspective” has some deep insights to offer concerning orientation and direction, which are very much in line with what we have come to know within sciences. Strong winters, for example, have a noticeable effect on people’s future focus because of the need to gather and store foodstuffs during the late summer period so to actually survive the long period of cold. Winter, of course, is a predictable phenomenon with a regular occurrence depending on the rotation of our planet around our nearest star, and in the course of time people have devised ways of keeping track of changes, by grouping stars into star signs, so they can determine whether we’re just beginning or nearing the end of a season. As Zimbardo shows, in areas with warm winters, there is no real need to provision for the future, but if you’re locked in by snow and ice for half your life you’d better come up with a good solution. During the late middle ages, the 13<sup>th</sup> century, possibly an obvious solution to deal with growing winter duration at the end of the medieval warm period, hay was invented, cutting grass during the autumn, drying it and storing enough to keep horses, cows and sheep alive through the winter. Hay allowed cities to develop from former trade settlements along the intricate network of





Roman roads north of the Alps and with the growing population it shifted civilization from the Mediterranean upwards. The Greek titan Kronos, the patron of harvest, was usually depicted with a sickly or a scythe, with which he allegedly beat his father Uranus, the night sky, to some extent symbolizing a conquering of the seasons. Kairos and Chronos signify two sorts of time, time as in duration, ranging from a moment or an era, and time as in cycles such as the Earth's day-night rhythm. Only with the Buddhist "wheel of time", Kalachakra (Kala signifies time while Chakra signifies cycles), do we encounter such notions which of form an integral part of the intricate cosmological tapestry where spatial and temporal worlds interweave. Yet, if the Mediterranean cultures came up with such elaborate concepts more

than two thousand years before the Northern tribes, maybe Zimbardo has been overseeing some measures in the local "time perspective", maybe all this is lacking is a sense of immediacy. As far as longterm visions go, the global humanitarian think tank "The Club of Rome" wasn't named that way because it was founded in Reykjavik or Helsinki.

We are living in challenging times with events which the world has never experienced yet. Our own creations have come to fulfill an ancient vision, stated far back in history by Aristotle who foresaw instruments so advanced that they "moved of their own accord" and "the shuttle would then weave, and the lyre play of itself; nor would the architect want servants, or the master slaves." Italy, while even the locals think it has been lagging behind on the more modern Northern Europe, has actually maintained a very large number of small and medium-sized enterprises, more than twice the average in the European Union, of which few depend on assembly line work. By taking it slow, Italy has retained skills that other countries have lost and has kept the chain of experience unbroken for many crafts, in science, medicine, engineering, architecture, arts and design. In rural Italy, within a radius of a half hour's drive one can still find woodworkers with incredible skill and experience. It is not like Italy has grown backward by being left behind, but it has managed to mix modernity and antiquity in a way that has them ideally positioned for the nearby future.

When automation will be automated and general purpose manufacturing means like 3D-printing and modular robotics mix with ICT, when carefully aimed stylish design will be vastly more important than mass production, Italy can harvest its diversity and all will make sense.

If we were to believe the mind numbing grind that passes for common sense, we wouldn't have the braggadocious bold disregard of normal restraints that made Italians invent the telephone, radio, battery, internal combustion

engine, helicopter, nuclear energy, plastic and mp3. If we were to believe the verbal tsunami the news machinery spatters out every day, we wouldn't comprehend the limits of our understanding and we would never dare to dream, let alone realize one. We would never read The Harford Courant 1933 report on "A mechanical horse, designed to substitute for the farm animal or even light tractor, has been invented by an engineer here, Signor D. G. Alzetta. "I see no reason why legs should not be as fundamentally a motive force as wheels," Signor Alzetta said. "Practically everything that nature permits to move, except the enormous forces of the sea and glaciers, gets there on legs. Wheels were the invention or afterthought of men."

### The BIG WIN Crossword Answers (From WIN ONE 12)

1. E	D	2. G	E	W	O	R	T	3. H		4. I	5. S
A		O						6. A	N		P
7. R	O	L	P	8. H		9. A	N	N			I
L		D		O		A		10. G	11. O	12. A	D
13. Y	I		14. O	N	15. T	H	E	E	D	G	E
			16. S	O				17. D	E	A	R
18. B	19. E	20. A	21. T			22. L	23. A				
24. A	T	H	E	I	25. S	T	I	C		26. T	27. H
28. U	C	A	S		A		D		29. T		A
M			30. O	E	D		31. S	T	E	E	L
E		32. O	R						N		L
33. R	A		34. O	W	E	N	C	O	S	B	Y

**WIN 13 Puzzles and Quiz: answers on the next two pages.**



1) 16 22 34

23 31 52

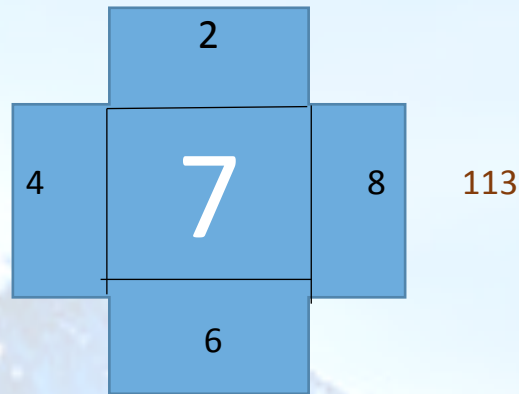
39 53 86

 $1+2=3$ ;  $6-2=4$  (34) $2+3=5$ ;  $2+1=3$  (31) 65 $3+5=8$ ;  $9-3=6$  (86)

The numbers add  
vertically as well.

(16 + 23 = 39, etc.)

2) 53



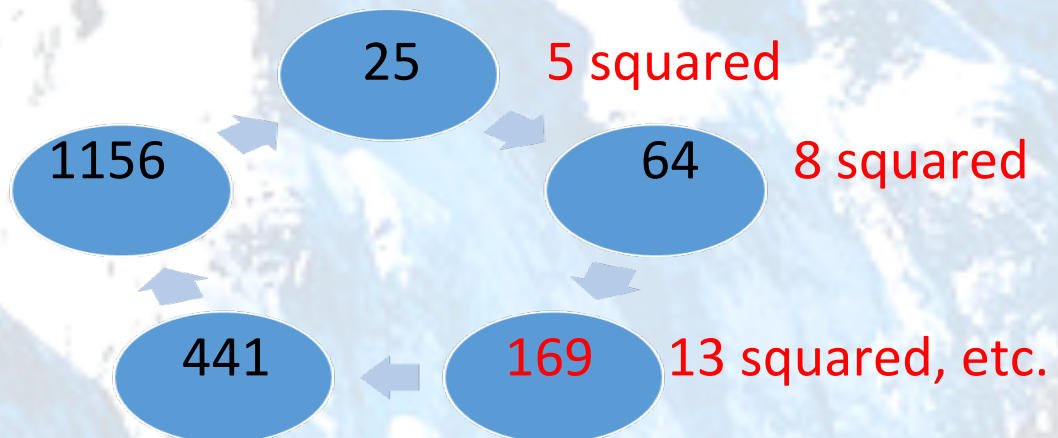
Answer for puzzle 2:

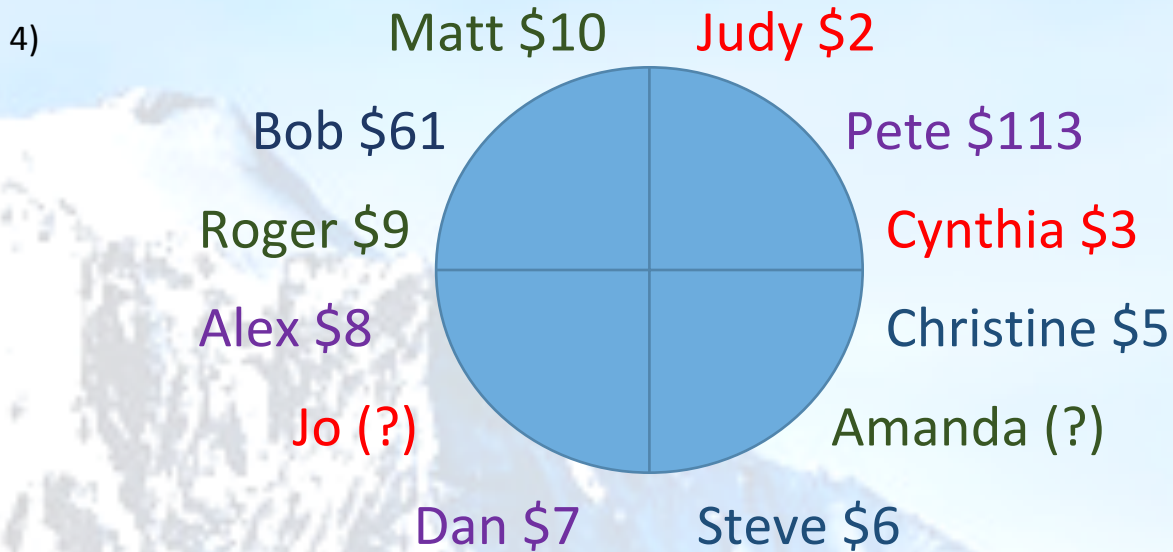
7 squared, plus the number in black, squared...

85      $49 + 36 = \underline{85}$ 

## Find the missing numbers in the four puzzles!

2) Fibonacci sequence, squared:





Here is a meeting.

The twelve executives earn a certain amount of dollars per hour. Bob, Pete, Jo and Amanda are on bonuses based solely on their two subordinates' pay.

How much do Jo and Amanda earn per hour? Jo earns \$13; Amanda earns \$181.

Who do they work with? Jo works with Judy and Cynthia; Amanda works with Roger and Matt. The bonuses are worked out by taking the earnings of the two subordinates and squaring them, then adding them together. Hence, Jo earns  $(2 \times 2) + (3+3) = \$13$ ; Amanda earns  $(9 \times 9) + (10 \times 10) = \$181$ . At the meeting, the subordinates are sitting opposite their bosses – see the colour-coding!

1. What was the famous astronomer Edwin Hubble's middle name? **Powell**
2. WIN member Andrew Paul is sitting next to a statue of whom? **Alan Turing**



3. First published in 1987, who wrote the book "On Ethics and Economics"? **Amartya Sen**
4. What is *musophobia* the fear of? **Rats and mice.**
5. From which country does the word *ombudsman* originate? **Sweden**
6. Commemorated by the Rufus Stone, how was William II of England killed? **By an arrow striking him in the chest.**
7. Connected with the answer to question five, what were awarded for the first time on 10<sup>th</sup> December 1901? **Nobel Prizes.**