



FRIENDS OF THE MIDDLE NEWSLETTER #251 — OCT. 19, 2012

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The Search for Truth and Certainty

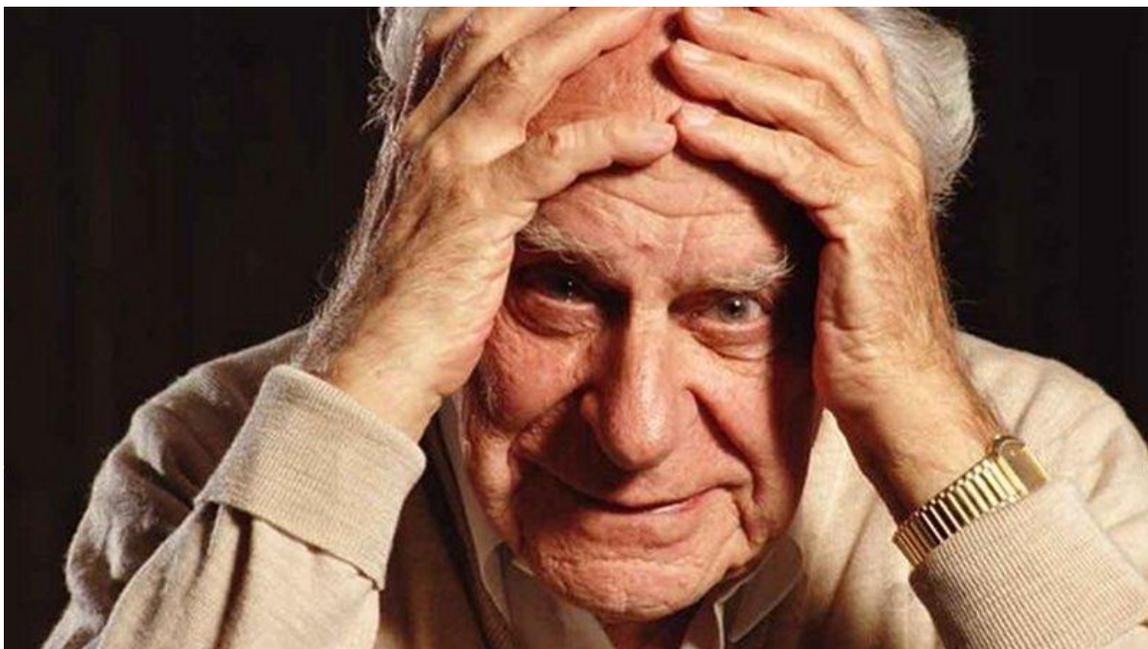
(posted by Steven W. Baker / SteveB, Oct. 19, 2012)

You never can be too sure, can you?

"Karl Popper, the Enemy of Certainty" by Liz Williams, *The Guardian*

[Sept. 10, 2012, (<http://www.guardian.co.uk/commentisfree/2012/sep/10/karl-popper-enemy-uncertainty>)

(The effects of Karl Popper's work are still being felt today both within and beyond the philosophy of science.)



Philosopher Sir Karl Popper (1902-1994) at his home in Croydon, London, August 31 1992.
Photograph: David Levenson/Getty Images

You might ask why we should care what an Austrian philosopher of science who has been dead for 18 years thought about the nature of scientific inquiry. Yet much of what Karl Popper contributed to the philosophy of science has now passed into mainstream thought, into the currency of that nebulous, tricky ontology known as "common sense". In the case of philosophers such as Popper, their work is, in a sense, too recent to be able to

evaluate with the level of hindsight that we might apply to more distant thinkers, such as David Hume, and yet it is worth attempting to unpack.

Born in 1902, in Vienna, the young Popper demonstrated a broad range of interests (music was a dominant passion) and an inquiring mind: he entered into the intellectual hotbed of Austrian culture, attending lectures by Einstein, investigating the psychotherapeutic theories of Freud and Adler, and becoming a Marxist. He decided at the age of 17 that the latter ideology was unsustainable, in large part as a result of an incident during his brief time in the Austrian Communist party, in which eight of Popper's friends were shot by the police in a riot instigated by the party in 1919. When Popper, somewhat naturally, complained to party leaders about this, he was told that loss of life was inevitable in the runup to revolution: Popper disagreed, and this sparked his lifelong commitment to political moderation, tolerance and liberalism.

The search for truth was, Popper considered, the strongest motivation for scientific discovery. His role was to determine how we can ascribe truth to the claims made by science, religion and politics. He did not, however, become a member of the Vienna Circle, that group of intellectuals who, following on from the work of Wittgenstein (the *Tractatus* mark-one version of that philosopher) aimed at the unification of the sciences and the wholesale rejection of metaphysics. Popper's antipathy to Wittgenstein meant that he was not invited to become a member of this particular group, but being cast in the role of the formal opposition seems to have honed his own thinking on logical positivism. Following on from Hume and the latter's rejection of induction, Popper took a stand against an empiricist view of science, endeavouring to show via his rejection of verificationism, and consequent espousal of falsificationism, how scientific theories progress. We will be looking at this more closely in future articles, but the fundamental principle of falsificationism is this: any contradictory instance to a theory is sufficient to falsify that theory, regardless of how many positive examples appear to support it.

Attempts to present theories such as Marxism, Adlerian psychology and astrology as scientific are subjected by Popper to his own analysis of falsificationism, and fail the test. It is perhaps worth noting that Popper's own doctorate was in psychology, attained in 1928.

Popper's work, therefore, was fuelled by a number of engines: a disillusionment with Marxism, the increase of Austrian fascism, which led to his move to New Zealand in 1937 and then London in 1946, and a distaste for the psychological models of the day. Popper's concerns over attempts to present psychology as a science, in contrast to the approach demonstrated by physicists such as Einstein, provide the groundwork to his work on falsifiability. Einstein's physics, which Popper regarded as somewhat unstable, nonetheless contains the parameters for its own falsifiability: we can say what it would take to render the theory false. This, Popper pointed out, was not the same for psychological theories, which are unfalsifiable in *principia*. The bulk of Popper's work in this particular area was done in the 1930s, in *The Logic of Scientific Discovery*.

During his time in New Zealand, Popper wrote his principal political tract, *The Open Society and Its Enemies*, a two-volume work in which both Plato and Marx come under fire. He criticised historicist analyses, in which society proceeds according to fixed and predictable political laws, and claimed that such analyses formed the basis for both ancient and modern totalitarianism. Epistemology is directly linked to politics within Popper's work: certainty forms the basis for totalitarian thought, and yet it is a certainty that is baseless if considered scientifically.

Popper died in 1994, having influenced the course of the philosophy of science throughout the 20th century. He remains one of the most significant commentators within the discipline, and the effects of his work are still being felt today both within and beyond the philosophy of science, connecting as they do epistemology, politics, and the scientific method.

When it comes to logical positivist analyses of the scientific method, Popper takes a metaphorical axe and hacks away at the roots: his critique of positivism is essentially a critique of induction itself.

Positivism stems from the work of the Vienna Circle, of Neurath, Carnap and Reichenbach, among others. It holds that the scientific method is based on verification, i.e. that a statement is only meaningful if it can be empirically verified or if it is analytic (the truths of mathematics and logic).

Empirical verification comes from induction. We seem to be pattern-matching creatures - when we have a theory, we cleave tightly to it. We go to considerable lengths to seek confirmatory instances of it. Unless we are scientists, and properly rigorous, we typically discount, explain away, reject falsifying examples. Yet following Hume's much earlier critique of this methodology, Popper maintains that inductive logic is inherently flawed: just because the sun has risen every day until now does not necessarily entail that it will rise again tomorrow. One instance of the sun's failure to rise will falsify the theory that "the sun always rises".

The scientist should reject theories when they are falsified. For instance, Einstein's theories generate hypothetical consequences which, if shown to be false, would falsify the entire theoretical structure on which they rest. Psychological theories, however, in their attempt to explain all forms of human behaviour, can continually be shored up by subsidiary hypotheses. Exceptions can always be found. On a Popperian model, psychology resembles magical thinking: if an expected result does not manifest, explanations can be found which explain that failure away, and thus the core theory remains intact. This, Popper considered, is a weak point – the theory cannot be properly tested if it is inherently unfalsifiable.

Popper gives the example of a man who saves a child from drowning, and another who lets the child succumb. Both can be explained in Adlerian terms: the first has sublimated his negative urges, and the second is still suffering from feelings of inferiority, and cannot. But if the theory cannot be disproved, is it therefore scientific? Popper argues that it is not.

I could not think of any human behaviour which could not be interpreted in terms of either theory. It was precisely this fact – that they always fitted, that they were always confirmed – which in the eyes of their admirers constituted the strongest argument in favour of these theories. It began to dawn on me that this apparent strength was in fact their weakness.

He goes on to say that:

Once your eyes were thus opened you saw confirmed instances everywhere: the world was full of verifications of the theory. Whatever happened always confirmed it. Thus its truth appeared manifest; and unbelievers were clearly people who did not want to see the manifest truth; who refuse to see it, either because it was against their class interest, or because of their repressions which were still "un-analyzed" and crying aloud for treatment.

To Popper, therefore, exceptions immediately falsify a theory, whereas confirmatory instances are just references to experience and thus possess no inherent logical merit. Falsification should thus replace induction as a core focus of the scientific method.

This is not to say that Popper believes that the pseudo-sciences, such as psychology are invariably wrong: they may hit on truths by accident, they may simply be insufficiently rigorous at present, yet are proceeding towards rigour, or they may explain things in a way that is not scientific. They may undoubtedly be interesting. With regard to the psychological theories of Freud and Adler, Popper himself remarked:

I personally do not doubt that much of what they say is of considerable importance.

All that Popper is claiming is that the underlying theories are not sciences, although they may one day play a role within a scientific paradigm, a view which seems to have enraged those who want to claim scientific status for sociology, for example.

Irrefutability is, Popper insists, a vice rather than a virtue. We should be looking at theories that are confirmed by *risky predictions*: those predictions which should have led to an instance that disconfirms the theory. Destructive testing is the only really viable scientific test: we should always aim at refutation, not confirmation, for confirmation is too easy and too weak.

Attempts to present political systems as scientific are increasingly regarded as old-fashioned: the "common sense" view suggests that politics is not scientific, cannot be reduced to a set of principles such that it can be applied

across cultures and societies. Yet to an extent, this "common sense" view derives from the work of Karl Popper, from that early attempt by the latter to tackle claims of Marxism's "scientific" basis. Popper's harsher critics have claimed that it is only because his attention was turned to Marxism that he himself attracted further notice at all, but I would dispute this. I consider that Popper's critique of logical positivism is a devastating one; he would have had a place in the philosophy of science even without the critique of contemporary political philosophies.

That critique emerges out of Popper's rejection of verificationism and his espousal of falsificationism. Perhaps ironically, Popper was himself a teenage Marxist, attracted by the apparent explanatory power of the ideology. Yet, with a remarkable degree of insight, fuelled by tragic personal experience, he soon realised that this explanatory power was itself an illusion – a weakness of the ideology, rather than a strength, and it was this insight (derived ultimately from the much earlier work of Hume) that provided the driving force behind his own critique of verificationism, both within Marxism and beyond it. By the time he was 17, Popper said, he had realised that:

I had accepted a dangerous creed uncritically, dogmatically... Once I had looked at it critically, the gaps and loopholes and inconsistencies in the Marxist theory became obvious...

Marxism, Popper claims, is analogous to the psychological theories of Adler and pseudo-sciences such as astrology. His attack upon the ideology became two-pronged: Marxism principally consisted of unfalsifiable claims, and it was a historicism. It could not, therefore, be described as scientific.

I found that those of my friends who were admirers of Marx, Freud, and Adler, were impressed by a number of points common to these theories, and especially by their apparent explanatory power. These theories appear to be able to explain practically everything that happened within the fields to which they referred... There was no conceivable human behavior which could contradict them.

What do we mean by "scientific", in this instance? Marx claimed that his system of political thought was predictive and, to an extent, this was the case. Yet Marxists did not follow the strict Popperian criterion of falsification: when predictions were not in fact borne out (for example, the failure of working class revolution to occur throughout European societies), the underlying theory was not rejected, but was salvaged by the use of ad hoc hypotheses which were deployed to shore the theory up – a classic symptom of a pseudo-science, according to Popper. Initially an attempt at scientific rigour, Marxism collapses back into the mire.

It's obviously possible to take issue with this on a number of counts: Wollheim, Cornforth and Hudelson all did so, among others, concentrating primarily on the accusations of historicism. One could also argue that Popper's critique of Marxism applies principally to efforts to defend the ideology on scientific grounds. There are plenty of Marxists out there who take a different view of predictability and the capacity for explanation and analysis. Popper's critique of verificationism is primarily to challenge claims of scientific status; it does not necessarily state that the theory should be thrown out entirely.

Other commentators (Verikukis, for instance) seek to challenge Popper on his home turf, claiming that he exhibits a double standard – a higher bar for Marxism, and a lower bar for his own attempts to devise a social science. Verikukis argues that the charges of unfalsifiability against Marxism have rarely been addressed, except in the wider arena of debunking the criterion of falsifiability itself (get rid of that, and the anti-Marxist critique collapses like a house of cards, requiring a complete refit elsewhere). This is the approach taken by Kuhn, Feyerabend and Lakatos – none of them Marxists – which we will consider on another occasion.

But it isn't just Marx who comes under fire in Popper's two-volume work, *The Open Society and Its Enemies*. Modern totalitarians are compared with ancient ones, namely, Plato: an early proponent, so Popper claims, of utopian social engineering. Given the nature of the society in *The Republic*, and its reliance upon a kind of early eugenics, I find it difficult to disagree with much of Popper's analysis. The utopian engineer, according to Popper, formulates laws about social development and prescribes action accordingly: both Plato and Marx fall into this historicist guise.

The history of the philosophy of science throughout the 20th century is marked by sporadic reactions to Karl Popper, breaking out into florid and controversial display and effectively governing the course of the discipline as

the century winds to its close. Popper's most significant critics during this period were the trio of Imre Lakatos, Thomas Kuhn and Paul Feyerabend – very different thinkers who, nonetheless, in their response to the theory of falsification, served to drive the philosophy of science forwards in leaps and bounds.

A central difficulty of falsification is behavioural rather than theoretical – falsificationism is an ideal. Scientists do not, in practice, jettison theories in response to a single falsificatory instance.

But what do they do instead? Generally they attempt to rescue their theory by dint of shoring it up with auxiliary hypotheses. Popper recognises this, referring to it as the "conventionalist stratagem". The problem with that stratagem is that, eventually, it destroys the theory's testability: astrology does this by refusing to countenance any negative instance; it renders itself unfalsifiable and therefore superficial. Many positive examples are invoked in support of the theory: it is based on inductive instances. But negative examples – of which there are many – are discounted as falsificatory instances by astrology's followers, and thus the theory chugs on, undeterred, yet increasingly weakened.

The precise manner in which scientists shore up their theories forms the basis of our trio's work. There are a number of reasons for the conventionalist stratagem, most of them obvious. If you've invested a great deal of time and money in the investigation of a particular scientific theory, you will, naturally, be loath to throw the theoretical baby out with the bathwater – especially if your work is funded by a much wider organisation, such as the government or the military.

These practical considerations aside, scientists get attached to theories – and this, too, is where the sociology of science comes in. Commentators vary on how far they believe that scientists' attachment to particular paradigms governs their thinking. In the pure realms of science, they're probably not supposed to get attached at all (theories aren't cats), but scientists are human, too, no matter how sniffy stringent rationalists might get about the issue.

Of the philosophers, as opposed to the sociologists, of science, it is probably Kuhn who has taken this view furthest: scientific paradigms, he claims, only really change when the old guard who promoted them either retire or expire. This is essentially a non-rational view of theory change, and has been open to some criticism as a result.

So how does Kuhn characterise the scientific method? Science, Kuhn claims, is formed of competing paradigms, one of which will usually be dominant in any given period. A scientific paradigm consists of a core theory surrounded by a number of auxiliary hypotheses. The core theory generally remains constant, whereas the auxiliary hypotheses are modified in the light of new or conflicting evidence.

Eventually, it may prove impossible to support the core theory by hypothesis modification any further, and at this point the core theory itself is abandoned or radically altered and a paradigm shift occurs. But this is an unusual event, going beyond what Kuhn refers to as "normal science": those often lengthy periods in which scientists try to hang on to their theories in the face of competing evidence. Popper's view is, Kuhn maintains, too idealistic.

Lakatos endeavours to reconcile the Popperian viewpoint with that of Kuhn: dispensing with the concept of the paradigm, he suggests that science moves forwards by means of the progressive research programme. Rather than invoking truth or falsity, we should consider whether a research programme – the hard core of hypotheses that constitute a theory – is progressing or degenerating. Does a theory predict new facts? Does it grow? If so, we may say that it is progressing. Lakatos's views form a halfway house between Kuhn and Popper (he was a student of the latter), and his approach is often considered to be a more nuanced form of falsificationism.

A more anarchic approach – literally – is offered by Feyerabend. Auxiliary hypotheses are critical, he argues, but may be irrational. In fact, it's impossible to develop any set of methodological rules by which scientists work: ad hoc, rule-breaking postulates are the order of the day. We seem to be heading at full speed towards epistemological relativism here, and indeed, according to Feyerabend, this is the case: not only does science fail to proceed according to fixed principles, but it doesn't deserve its epistemic privileges, either. Far out! So if your preference is for Feyerabend over Popper, astrologers might be on to something, after all.

Karl Popper died in 1994. As I remarked in the initial article in this series, his thought is, in many ways, too close for us to be able to evaluate with the full benefit of hindsight. But what would Popper make of the new(ish) millennium? It is hard not to believe that he would be cast into despair. Knowledge claims (and, more than that, certainty claims) are being made not only throughout political and religious ideologies, but also within alternative therapies, 2012 cults, revisionist approaches to history and a host of other fields.

Let's remind ourselves of Popper's actual take on this: he does not suggest that we reject these sorts of claims wholesale, but he does insist that we do not refer to them either in terms of epistemological certainty or in terms of science. They may, one day, achieve full falsifiable rigour, or they may not; they may be useful in other respects, or they may not, but we must be clear about their epistemological status.

So let us now take a step back and consider whether Popper has been successful in establishing falsificationism as the methodology du jour. Here, I think, we must acknowledge that he has not. Probabilistic induction remains the methodology of choice, not only among scientific practitioners, but also among those philosophers of science who take more moderate stances of other philosophers of science. Falsificationism also comes under fire from the scientific establishment itself, for instance, in the work of physicists Alan Sokal and Jean Bricmont, who state:

When a theory successfully withstands an attempt at falsification, a scientist will, quite naturally, consider the theory to be partially confirmed and will accord it a greater likelihood or a higher subjective probability... But Popper will have none of this: throughout his life he was a stubborn opponent of any idea of 'confirmation' of a theory, or even of its 'probability' ... [yet] the history of science teaches us that scientific theories come to be accepted above all because of their successes. (Sokal and Bricmont, 1997)

Both astrology and astronomy make incorrect predictions, Sokal and Bricmont argue, and falsificationism does not differentiate between them. But this claim is disputed by writers such as David Miller, who bring us full circle by pointing out that astronomy contains the parameters for its own falsifiability, whereas astrology does not.

What of Popper's political thought – that body of work so closely intertwined in Popper's writings with epistemology and scientific enquiry? His views on tolerance and anti-totalitarianism do now look like common sense to many. Political and social tolerance clearly leads to a paradox: summed up in the issue of where one person's fist ends and another's nose begins. Popper was a champion of liberalism throughout his life. He argues that tolerance means that we may eventually fail to tolerate intolerance. We can contain intolerant political philosophies, he says,

... as long as we can counter them by rational argument and keep them in check by public opinion.

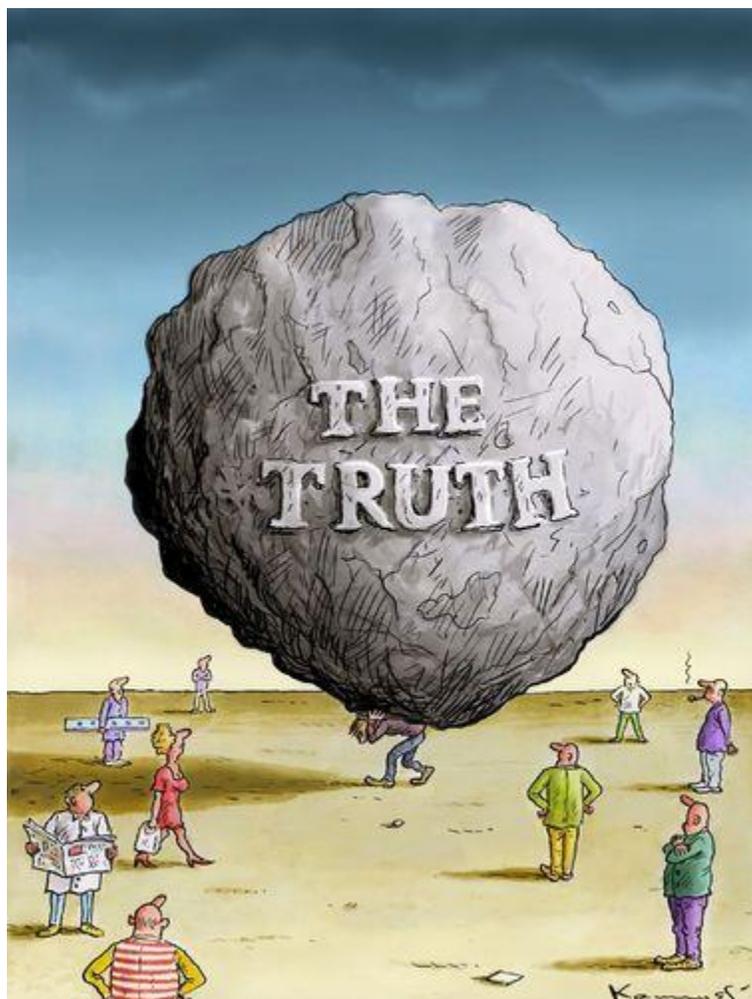
However:

We should therefore claim, in the name of tolerance, the right not to tolerate the intolerant. We should claim that any movement preaching intolerance places itself outside the law, and we should consider incitement to intolerance and persecution as criminal.

These are opinions which are highly relevant to today's relativistic, pluralistic societies, in which political and cultural boundary settings are still of necessity emergent, imprecise and fluid. Here, epistemological claims of certainty cannot be applied and Popper's early and tragic encounters with the results of those claims – on both sides of the political spectrum – surely informed his commitment to as great a degree of mutual tolerance as possible. Nor is this incompatible with his commitment to falsifiability as a standard for scientific rigour: fallibilism underlies both the knowledge claims of science and those of politics.

The old scientific ideal of episteme – of absolutely certain, demonstrable knowledge – has proved to be an idol. The demand for scientific objectivity makes it inevitable that every scientific statement must remain tentative for ever. It may be corroborated, but every corroboration is relative to other statements which, again, are tentative. Only in our subjective experiences of conviction, in our subjective faith can we be 'absolutely certain'.

The "craving to be right", that hostility to tolerance which is found throughout all human inquiry, is in Popper's eyes the basis for totalitarian thought; only once that is rejected can we get down to the business of testing truth claims, and only then can we be honest about what we do and do not know.



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| 20121018-01 | 05:25 | MarthaH | Photo: The Future of Education: How Cold! |
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(USA Today)

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| 20121018-03 | 09:41 | Pam | Re: Photo: The Future of Education: How Cold! (reply to MarthaH, above) |
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Wow. Cold indeed. I see the future, and it looks bleak. I had a beer yesterday with an old friend who taught with me at UNCG. He's almost as pessimistic as I am about education and believes that in 20 years most universities will have closed. The expensive, private ones will carry on for the select few, but everything else, he believes, will be online. He's teaching an online course himself and has done for years. A real cynic. I tell myself that whatever the

future looks like, the people living it will think it's just fine, an improvement even. I feel superannuated, which has its perks--like being retired and having time to "do my own thing."

My niece is an assistant principal at an elementary school in Indianapolis. She wrote a great piece on Facebook (Karen Loveless Linn) in response to something in the Indianapolis Star. It's a poignant plea for the right kind of attention to be paid to struggling schools. My second husband told me this story once: when he was in graduate school at Princeton, one of his classmates was having lots of trouble academically. He took a paper he'd written to his professor, a most eminent scholar, and listened to what the old man had to say. His response: "I don't need criticism; I need HELP!" Another friend, who is teaching at UNCG now and has quite a ways to go before he can even think about retiring, said on Facebook yesterday, "It's time to either dust off my resume or retreat to the scholar's cave." There's trouble in River City.

[20121018-04](#) 11:15 Art Re: Photo: The Future of Education: How Cold! (reply to MarthaH & Pam, above)

Once read a Sci Fi story about the future where everybody lived in single enclaves served by robots and only rarely ever interacted with other humans (a disgusting requirement for procreation and all that). At the time I thought pretty far fetched, now not so sure.

[20121018-05](#) 12:39 Pam Re: Photo: The Future of Education: How Cold! (reply to Art, above)

It's amazing how many things that happen in science fiction turn up later in reality, perhaps in a slightly different form. We laughed at Dick Tracy's watch. Who's laughing now?

[20121018-02](#) 09:37 Art R0mney's Tax Plan

Finally, details on the Romney tax plan to offset his tax reductions.

<http://www.romneytaxplan.com/>



[20121018-06](#) 16:04 Ben Photo: Today's Seafood Lunch at Apple

Today I enjoyed not only a lovely lunch, but a chance to see how an iPhone 4s camera (temporarily in my possession for replicating customer issues) affects the quality of my lunchtime photography. We'll let you be the judges over the next few days while I have it.

Lunch Today was the Far East line's excellent implementation of Shrimp Satay over rice noodles with satay sauce (peanuts with chilis), with generous dollops of carrot shreds, peanut chunks, onion (in the sauce), pickled ginger (gari), a clump of jalapeno slices, and a garnish of pickled kale stem.

Zing! These flavors worked great with each other. The zesty jalapenos were an unobtrusive accent to the chilis in the satay sauce; the small plump uber-fresh peeled Gulf shrimp mirrored the texture of the fine strands of rice noodle, which in their turn absorbed the flavors of the sauce very well. The pickled ginger and kale stem were a mouth-puckering offset, very tasty between bites. I am not a noodle guy by any stretch, but this was a delicious lunch.

Unable to resist Faith's charms for the entire week, I declared Dessert Day. My only dessert so far this week was her gorgeous Chocolate Bosc Tart with Grand Marnier chocolate ganache in a chocolate cake shell. It was decadent, and very, very fine indeed. (K., I can hear you panting...)

Lunch, as seen through an iPhone 4s:



Shrimp Satay over Rice Noodles

Get-together in a restaurant...



Enjoying the beauty of a museum...





<http://www.flickr.com/photos/doneastwest/6101475081/>



—Friends of the Middle,
Steven W. Baker (SteveB), Editor/Moderator

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