

Cracks in Bloom's Taxonomy at 60

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Abstract. Bloom's Taxonomy, although universally recognized, if not endorsed, has been given a free ride for too much of its history. Some obvious shortcomings need to be shored up, if not simply pointed out. The current article seeks to upgrade Bloom's epoch-making contribution to pedagogy and repair its worst distortions as to the nature of learning, utilizing both new and old material.

Keywords: Bloom, Taxonomy, Education, Learning Objectives, Epistemology, Pedagogy

1. Technical Introduction

Certified teachers around the world and university lecturers hardly need to be introduced to Bloom's Taxonomy of Educational Objectives, a staple of institutions of quality learning throughout the world and a variable synonym of lesson-planning. Notwithstanding, we offer this refresher course and prefatory summary for the uninitiated and those "slipping out-of-touch":

Discussions during the 1948 Convention of the American Psychological Association led [Benjamin] Bloom to spearhead a group of educators who eventually undertook the ambitious task of classifying educational goals and objectives. Their intent was to develop a method of classification for thinking behaviors that were believed to be important in the processes of learning. Eventually, this framework became a taxonomy of three domains:

The cognitive - knowledge based domain, consisting of six levels

The affective - attitudinal based domain, consisting of five levels, and

The psychomotor - skills based domain, consisting of six levels.

In 1956, eight years after the group first began, work on the cognitive domain was completed and a handbook commonly referred to as "Bloom's Taxonomy" was published.²

Bloom's *cognitive domain*, emphasized most in contemporary education, invokes higher-order thinking in line with this rubric:

Knowledge → Comprehension → Application → Analysis → Synthesis → Evaluation

2. Thematic Introduction

Perhaps nothing is so ubiquitous in the landscape of education – as a discipline today – as Bloom's Taxonomy of Learning Objectives. Seen as a way to make learning relevant, objective and deep, it is considered indispensable in ensuring quality education by countless school systems. This current paper contends that the Taxonomy has critical problems with **information, orientation, organization** and **motivation**. Addressing these problems requires some unpacking.

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² http://projects.coe.uga.edu/epltt/index.php?title=Bloom%27s_Taxonomy, Forehand, M. (2005). Bloom's taxonomy: Original and revised.. In M. Orey (Ed.), *Emerging perspectives on learning, teaching, and technology*. retrieved Oct. 10, 2011.

3. Essence of the Challenge

Bloom's Taxonomy at 60 is showing severe if not critical signs of aging. The taxonomy is almost taxiderm. Greying of the eyebrows, plus almost total loss of scalp hair; cracking skin amid huge fat deposits; high-blood pressure and hardening of the arteries; and finally an unnamed auto-immune disorder threatening major-organ failure: All spell disaster. Determining the exact pathology of these myriad problems plus deriving a course of cure is a complex task at best and may be utterly daunting to the even the most sober and judicious of minds.

As a friend-of-the-court briefing we offer this appeal as to Bloom's hospital stay and treatment. While partly covered by state insurance in the university system and partly by public-heroes/veterans' subsidies, the family of educators has been forced to cough up the money for the remaining rehab bills. We recommend that an old psychiatrist friend of the near taxiderm provide him with a seamless suicide-watch, given his rapid decline in recent months. More importantly, we believe in his right to life and temporary life-support, at the very minimum, despite calls for mercy-killing or callous abandonment. The redeeming characteristics of Bloom's public service place a responsibility upon us all, as members of civilization, citizens of democratic nations, and educators promoting higher-order thinking, viz., to provide him with another chance at life, including possible organ-transplant and regular outpatient treatment with monitoring visits, for the foreseeable future. Some form of life-support for the taxonomy can be put on standby.

4. Deciphering the Problem

As for graying of the eyebrows and loss of scalp hair, this can be directly related to the taxonomy's problem with superficiality. (Alas, how could higher-order thinking be superficial, when its whole premise is to escape superficiality!) A patent failure to escape superficiality has taken its toll precisely where you would expect, on the surface hair. By superficiality, we mean **the equation of knowledge and information** in the first degree of Bloom's cognitive thinking skills, which is the natural entry point into his system for serious educators. Saying "knowledge" when he means "information" may also require an investigation into borderline senility.

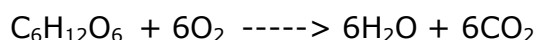
This equation of knowledge and information has had the most deleterious effects on that body of knowledge we know of as modern education. The simultaneous proliferation and monopolization of a vast, new mass media, at once pervasive and civilization-wide, has made the repetition of wrong information(i.e., lying) more convenient than ever and the blacking out of critical information(hence distortion and obfuscation) more practical than ever. Presumably, when we have lots of information being provided, we have lots of knowledge being provided, *ipso facto*.

I sometimes think that the price of liberty is not so much eternal vigilance as eternal dirt.

- George Orwell

Critics and apologists of Bloom's taxonomy alike will agree that he means "information" when he says "knowledge." He means the raw data of experience or the unprocessed reception of structured lessons. Yet there is an implicit assumption here, right or wrong, that unrefined information – even simple sensory input – is the most rudimentary knowing and in a sense perfectly normal. More power to common sense, you say!

To provide a real-life, flesh-and-blood example, suppose a teacher said to himself/herself that "Life begins with breath, and so does my course." The course in question then begins with the following paradigm of cellular respiration:



What began as an innocent idea became meaningless abstraction, for lack of context in the said presentation. The context – which existed in the formation-of-intention (above) – did not manifest in the presentation, and the result was an abstract, disembodied and arcane set of information.

Apparently, the bite of Bloom's Taxonomy is more vicious than its bark. The spectrum of higher order thinking per Bloom seems to imply (by its *bark*) that **the teacher or high-level persona is quite sophisticated, at least to the degree of application and analysis**, while **the student is struggling or creeping at the degree of information and comprehension**³, beginning at zero at the time of the lesson-deposit, which we call instruction, presentation and delivery (amid very *biting* condescension). Yet the reality is that the student in question is not moving mentally at all without the minimal, necessary perspective, which we call context. The context of a lesson, or of any structured information, is what shows us its natural utility (minimal application) and meaningfulness (minimal comprehension). In other words, from the outset, a teacher must to some extent bring the student to a basic grasp of the relevance of any data, for learning to begin. In the example above, this means that the instructor in question should 1) link the data to *the concept and mechanisms of respiration* in order to provide context; 2) if not, assuming the presence of more advanced students, provide a review or overview of the language of chemical reactions; 3) if confronted with still more advanced students, place functional respiration in the context of a cell's or an organism's overall functioning. But all of this needs to be stated. Whatever the particulars, the point stands proven that the lowest order of thinking, **the information which Bloom calls "knowledge," is not knowledge**, is not learning and is not good thinking.

As radically negative as this sounds, there are few alternatives to our analysis and conclusion. Suppose a teacher asks his students, face-to-face with the above equation "What is this?" Even that instance presumes minimal comprehension. The instructor is probing comprehension. We are already beyond the level of information. So **information cannot and should not be the starting point of learning or of formal learning**.⁴

It cannot be gainsaid, it cannot be denied that Bloom's Taxonomy to some degree wanted to overcome the chasm between novice and expert by creating a bridge between the two⁵, yet in the process **he normalized the state of ignorance**, viz. a totally uncritical transfer of data, in principle *ad infinitum*, as long as comprehension is looming on the horizon.

"Cracking skin amid huge fat deposits," in our parable above, symbolizes over-specialization, a **problem of orientation**, which is today rampant in modern academia: no doubt an outcome of our predilection for information before all else. Information, by its nature, is immediate, direct, quantitative and detail-oriented. Symbolic "fat" here is a symbol of such "knowledge": its being highly-concentrated, having long-term redeeming value in terms of protective warmth and its being a reliable energy-resource, and yet more importantly, despite all this its carrying the potential problem of being an unworthy substitute for intrinsic strength, represented symbolically by (contrasting) muscle tissue. All this results from Bloom's **disconnecting affective learning and motor skills from the world at large – by treating them as distinct individual variables**, in an individual totally free and independent from environment – or in an environment that is totally elastic. The taxonomy aims at knowledge-synthesis for individuals, not for societies.

High blood pressure and hardening of the arteries are symbolically related to **Bloom's conflating synthesis with projection** – two radically different modes of thinking. (Bloom's system has no "projection" per se.) I called this *creation ax nihilo* (in contrast to the divine *creation ex nihilo* in the

³ " We don't always learn new information in a sequential process according to levels of difficulty. This is a terminal problem for Bloom's taxonomy. Marzano and Kendall's revised hierarchy integrates motivation and metacognition to take us beyond Bloom: The key determinant of whether we attend to new knowledge is whether we consider it important." From Cameron Paterson at his blog <http://learningshore.edublogs.org/2011/02/20/bloom%E2%80%99s-is-dead-the-new-taxonomy-of-educational-objectives>, retrieved Oct. 1, 2011.

⁴ Clearly, some apologists don't see a contradiction here. "According to a biography of Bloom, written by former student Elliot W. Eisner, 'It was clear that he was in love with the process of finding out, and finding out is what I think he did best. One of Bloom's great talents was having a nose for what is significant' Mary Forehand (2002), Bloom's Taxonomy. This presupposes that teaching and learning is one dimensional. www.coe.uga.edu/epltt/bloom.htm Retrieved October 11, 2011. At the same time, note the opinion that "Before we understand a concept we have to remember it." from Educational Orgami at http://sop.oie.rice.edu/1CourseGoals/Blooms_Briefing.pdf

⁵ See Robert Fisher's *Thinking Skills* at http://www.teachingthinking.net/thinking/web%20resources/robert_fisher_thinkingskills.htm, Retrieved Oct. 11, 2011.

monotheistic religions), the “ax” referring to the option for fascist simplification of any system via truncation. In effect, we have a synthesis ignoring or bypassing the nuances of projection and creativity. Is his “synthesis” from analysis or evaluation or both or neither? In industry, to equate current synthesis with future projection would be considered nothing short of enshrining the status quo for the corporate powers-that-be, by blocking any and all competitors from potential entry, plus assuming fixed resources – fantasy paradise! This is a problem of poorly articulated (even hidden) **motivation** or a confusion between individual and collective hopes.

Next we encounter Bloom’s “analysis,” which even if it affords processes of classification, yet nonetheless **lacks any traction for focus and reflection**; separates right and left hemispheres of the brain; leads to micro-management, hairsplitting, stoicism, and professional elitism; and lacks an overall sense of mental **organization**. In the example above, analysis without reflection would mean isolating respiration from the other bodily systems; analysis without focus would mean ignoring purpose, utility and functionality. Analysis, when linked to utility vs. classification, is not about the big picture; it is about the small picture, nuts and bolts, or microcosmic preoccupations.

Auto-immune disorders are symbolic of this innate lack of comprehension. An auto-immune disorder happens when the body can’t distinguish its own living tissue from foreign bodies moving through it; either its own tissues are targeted or there is a failure to target foreign bodies inimical to the system. **Analysis and classification alone cannot see out of the box – do not address contextual issues** such as these, when there is a threatened rupture of context.

If we were to break the individualistic shell of Bloom’s *sovereign individual*, we would prod him to adapt to the state-of-the-art (albeit critically) in his own field and in related fields. Such adaptation implies that we submit to a greater order of existence, if not simply more a complex system, than that of our own making and choosing. On the proactive side, if we add “projection,” a projection independent of synthesis – call it a projection of enterprise – we thereby admit a finite horizon of possibilities, something short of omnipotence and moreover the utterly conditional nature of our successes, every success being linked to some responsibility, discipline or broad adherence to universal law. As adaptation implied conforming to the realities of that space we call the universe or the cosmos, systematic projection implies conformity to the realities of serial time. Science and objectivity are at stake. Simple “comprehension” doesn’t do all this.

In the example above, we could look at the effects of pollution (and all sorts of retardants) on breathing – if we added the perspective of *adaptation* – and we could look at the effect of secondary factors on enhanced and more efficient breathing, both direct and indirect – from the chemical process of breathing in hemoglobin to the organic environment of the tissues involved and their optimum functioning, all as an exploration *qua* enterprise for better facilitated breathing and an investigation into the limits of such improvement or upgrading.⁶

Below please examine our chart of a re-vitalized Bloom’s Taxonomy. The category of “observations and research” is a substitute for Bloom’s “knowledge.” Rising above the status quo in education, we aim for deeper authenticity, a new scientific methodology and greater accuracy.

A REVISED-STANDARD VERSION OF BLOOM’S TAXONOMY

Observations & Research	Comprehension or Perspective-Formation	Evaluation & Hypotheses	Reflection & Adaptation
Analysis & Classification	The Application-Process & Experimental Control	Synthesis & Drawing Conclusions	Enterprise & Projection

⁶ Seeking systematic enhancement is a question of empowerment and versatility vs. entrenchment and inflexible self-assertion. Physical scientists will note that methemoglobin reductases, superoxide dismutase, glutathione peroxidase and catalase all play a role in protecting and enhancing hemoglobin. See Children’s Hospital & Research Center Oakland’s website <http://rbclab.com/Pages/500/530/530.html>, retrieved Oct. 12, 2011.

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