education review
a journal of book reviews

Bees and Foxes, Spiders and Hedgehogs

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Murray, Michael. (Editor). (2002). ***A Jacques Barzun Reader: Selections from his Works*****. New York: HarperCollins.**
615 pp.
$15.95 ISBN 006093542 1

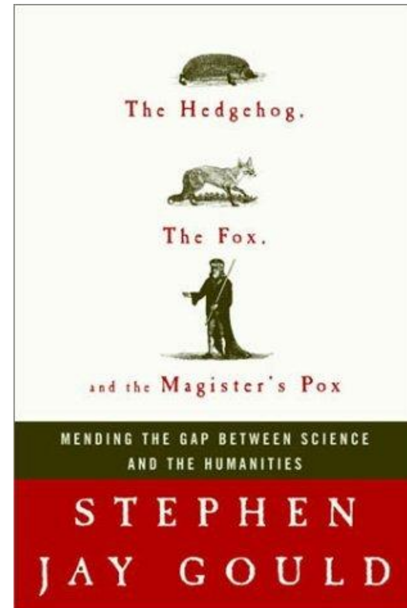
Gould, Stephen Jay. (2004). ***The Hedgehog, The Fox, and the Magister's Pox: Mending and Minding the Misconceived Gap between Science and the Humanities*****. London: Vintage.**
288 pp.
ISBN 1400051533 (Papercover)
ISBN 0609601407 (Hardcover)

January 1, 2006

Abstract
Based on selected ideas by Isaiah Berlin, Jacques Barzun, Stephen Jay Gould and others, this essay critically discusses different approaches to the production and transmission of knowledge. In particular, I focus on two themes recurrently debated in liberal education circles: the relative weight attributed to generalism versus specialization and the sciences versus the humanities, and the role and value of the classics in education today. I argue that Barzun and Gould contribute valuable insights which strengthen the case for a traditional liberal education that continues to give ample space to the humanities and to a generalist outlook on knowledge. At the same time, both books leave unaddressed other crucial contemporary issues such as the contribution of a general education to creativity and the role of the future in education. Nevertheless, at a time when spiders and hedgehogs appear to be in the ascendant, Barzun and

Gould amply illustrate the great value that can be added by a bee's and a fox's outlook on knowledge.

In a justly famous essay on Tolstoy, Isaiah Berlin (1978) categorized thinkers as either foxes or hedgehogs. The fifth-century Greek poet-soldier Archilochus first made this distinction, and it was further elaborated during the Renaissance by Erasmus of Rotterdam: the versatile fox tries his hand (feet) at many things, while the hedgehog doggedly pursues one big thing. According to Berlin, figures like Plato, Pascal, Hegel, Nietzsche, Dostoyevsky and Proust were definite hedgehogs, and Aristotle, Montaigne, Erasmus, Goethe, Joyce and Shakespeare, foxes. Tolstoy alone combined the traits of both.[1] In *The Hedgehog, the Fox and the Magister's Pox*, the late Stephen Jay Gould in turn built upon Jonathan Swift's story of *The Battle of the Books* to add the further contrast between bees and spiders. Spiders represent natural scientists, building ever newer, and often revolutionary, knowledge upon their own foundations—poison and gall. Bees are humanists. They keep reinterpreting the great classics, jumping from flower to flower and collecting the best of what is to be offered. But in so doing, they produce something valued at all times—honey and wax; beauty and utility; sweetness and light.



By this token, Stephen Jay Gould himself was that rare, Tolstoy-like, type. Gould was a single-minded hedgehog and a spider, who did more than his fair share in helping to build the great cathedral of our knowledge of nature upon the foundations of one big thing—Darwin's insights on evolution and selection (e.g. Gould, 1997; 2002). Yet he constantly nurtured the bee's love of what is best in our past. And his books on science frequently displayed the fox's intuitive turns in different directions, such as racial issues and intelligence measurement in education (Gould, 1996), or, indeed, baseball (Gould, 1997). Due to Gould's untimely death, *The Hedgehog and the Fox* is said to have been published, out of respect, in a largely unedited form. At times, this makes for lengthy, meandering passages, which could have benefited from a respectful editor's selective delete key. Yet Gould's scientific depth and breadth are luxuriously on display throughout. Characterizing Tolstoy's genius, Isaiah Berlin (1978, p. 48) wrote that it lay "in the perception of specific properties,

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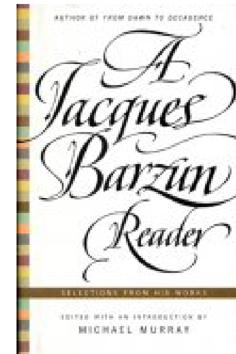
[1] Discussing a new translation of Proust's *Swann's Way*, André Aciman (2005) recently suggested a further metaphor to distinguish writers—snails and swallows. Swallows, quick, fast and agile, race though life, instantly correcting occasional mistakes and using all that comes their way for writing, wasting no material. Snails, slow and deliberate, burrow into themselves. Where swallows act, snails retract and speculate. Where swallows chug life down complete, snails ingest choice bits. And crucially, where to swallows life is an open book, to snails it is essentially unfathomable. According to Aciman, Balzac, Dickens, Fielding and Tolstoy were swallows, and Gogol, Austen, Stendhal, and Proust snails.

the almost inexpressible individual quality in virtue of which the given object is uniquely different from all others. Nevertheless, he longed for a universal explanatory principle; that is, the perception of resemblances or common origins, or single purpose, or unity in the apparent variety of the mutually exclusive bits and pieces which composed the furniture of the world" (p. 48). Berlin's words could have been written about Gould, the scientist.

In contrast, Jacques Barzun has always been a fox and a bee. Like Berlin in his time, Barzun is something of a contemporary Renaissance Man: a cultured historian of ideas, able to shed sweetness and light on topics as diverse as literature, opera, music, freedom, science, romanticism, modernity, the classics, and, of course, education. Well-edited, and accompanied by a short introduction by Michael Murray, this *Jacques Barzun Reader* consists of eleven sections packed with six hundred pages of essays of varying length, and which indicate a dazzling range of scholarship. The first section contains an autobiographical sketch from 1990. It relates how Barzun, who grew up in an artistic and modernist French environment that was shattered at the outbreak of the First World War, later found his professional vocation at Columbia University as a cultural historian in (and of) America. Barzun's self-proclaimed mission was "to fight the mechanical." As the author spells out in this essay and in another essay on "history as counter-method and anti-abstraction," his declared enemy of the mechanical can be found "not where the machine gives relief from drudgery but where human judgment abdicates." Such abdication is expressed, for example, in bureaucratic thinking, overly abstract teaching models, needless professional jargon, and "specialism" that never transcends its single task (p. 5). Other sections in the book deal with artistic issues such as language and style, what critics argue about, music and design, and some miscellaneous definitions and jottings ("G. W. Hegel/Invented the bagel/He liked its peculiar density/(His prose has the same propensity)" (p. 596)). Alternatively, various aspects of cultural history in America and France are discussed. American topics tackled include railroads, the export of democratic theory, and (like Gould) race and baseball. The two most insightful essays on France deal with the intellectual atmosphere of Paris in 1830 and with Flaubert's *Dictionary of Accepted Ideas*, which Barzun translated into English.



While Gould's *The Hedgehog and the Fox* is at times long-winded, Barzun's collected essays constitute a primer in conciseness. As his readers have had ample occasion to note over the past half century, Barzun does not beat around the bush in delivering his opinions. Their effectiveness is increased by a confident style and often aided by sharp wit. Educational nonsense, says Barzun, "comes from proposing or promoting something else than the prime object of the school, which is the removal of ignorance" (p. 392). And, "It is a fact of nature that there are more born poets than born teachers. But the world's work cannot depend on genius; it must make do with talent, that is to say, fair material properly trained" (p. 387). The author's confidence is evident also in his essays in praise of the supreme entertainment of good crime tales or against the complacent realism of much spy fiction. Barzun scoffs that in the latter, the characters "look wry and drink rye and make a virtue of taking the blows of fate wryly. It is monotonous. I am fed up with the life wryly" (p. 586). Of course, ever since his

influential *Teacher in America* (1945), and continuing with books such as *The American University* (1968) and *Begin Here* (1991), Jacques Barzun has written extensively on education in theory and practice. As I spell out below, two broad themes recurrent in Barzun's reader, and touched upon also in Gould's book, deserve the particular attention of education specialists today. These regard the generalism/specialization debate, and the role and value of the classics and of a liberal education.

A map around a home: Combining generalism with specialization

One of the key topics perennially debated in liberal educational circles is the issue of generalism versus specialization. In a paper included in the reader from 1991, Barzun sketches the outline of an ideal teacher education: "The all-important thing is mastery of a subject matter. Ideally, it should be the freely chosen major in college. This main subject needs to be supplemented by courses in other fields, to give awareness of their contents and outlook and their relation to the main subject. Providing this 'environment' is the ancient goal of a liberal education, *which may be likened to a map of the mental life with one region of it extremely familiar, because it is 'home'* " (p. 390, emphasis added).[2] Although these views are given a timely new airing in times of increasingly one-dimensional specialization, Barzun is, of course, in good company in addressing this topic. Over half a century ago, Albert Einstein staunchly, if somewhat more one-sidedly, defended generalism in schools, and the particular role played by teachers in conveying it. He did so on the grounds that generalism promotes a better adaptability to change and that it forms the *conditio sine qua non* of cultural life, including specialized knowledge:

> It is not enough to teach man a specialty. ... He must acquire a vivid sense of the beautiful and of the morally good. Otherwise he—with his specialized knowledge—more closely resembles a well-trained dog than a harmoniously developed person. … These precious things are conveyed to the young generation through personal contact with those who teach, not—or at least not in the main—through textbooks. It is this that primarily constitutes and preserves culture. This is what I have in mind when I recommend the "humanities" as important, not just dry specialized knowledge in the fields of history and philosophy. *Overemphasis on the competitive system and premature specialization on the grounds of immediate usefulness kill the spirit on which all cultural life depends, specialized knowledge included* (Einstein, 1954, pp. 66-67, emphasis added).

[2] Of course, the incentives governing contemporary university life make it often as prone to overspecialization as are primary and secondary school teachers. In Bloom's (1987, p. 339) view, "Most professors are specialists, concerned only with their own fields, interested in the advancement of those fields in their own terms, or in their own personal advancement in a world where all rewards are on the side of professional distinction. They have been entirely emancipated from the old structure of the university…. So the student must navigate among a collection of carnival barkers, each trying to lure him into a particular sideshow. This undecided student is an embarrassment to most universities, for he seems to be saying, 'I am a whole human being. Help me to form myself in my wholeness and let me develop my real potential' and he is the one to whom they have nothing to say."

Around the same time, Alfred North Whitehead (1949, p. 13), in his classic essay on *The Aims of Education*, tackled the specialization/generalism dilemma along lines more closely resembling Barzun's. Whitehead argued that "Culture is activity of thought, and receptiveness to beauty and humane feeling. Scraps of information have nothing to do with it. A merely well-informed man is the most useless bore on God's earth. What we should aim at producing is men who possess both culture and expert knowledge in some special direction. Their expert knowledge will give them the ground to start from, and their culture will lead them as deep as philosophy and as high as art." Whitehead, on whom a short essay by Barzun from 1948 is included here, suggested that generalism presupposes, or should be built upon a core of specialization:

> Again, there is not one course of study which merely gives general culture, and another which gives special knowledge. The subjects pursued for the sake of a general education are special subjects specially studied; and, on the other hand, one of the ways of encouraging general mental activity is to foster a special devotion. You may not divide the seamless coat of learning. What education has to offer is an intimate sense for the power of ideas, for the beauty of ideas, and for the structure of ideas, together with a particular body of knowledge which has peculiar reference to the life of the being possessing it. The appreciation of the structure of ideas is that side of a cultured mind which can only grow under the influence of a special study (Whitehead, 1949, pp. 23-24).

Interestingly, neither Barzun nor Gould refer to one of the potentially largest payoffs that can be expected from a wide-ranging, non-specialist outlook on knowledge. In recent years, political economists have come to temper the heavy traditional emphasis by economists on the economic benefits of increasing levels of knowledge and skill specialization on the part of students and workers (Estevez-Abe et al., 2001; Thelen, 2004).[3] At the same time, students of creativity in artistic and scientific production, from Gilfillan (1935) to Koestler (1964), Merton (1968; 1972), Csikszentmihalyi (1996) and Burt (2004), have long shown that the ability to connect, synthesize and associate across different subfields is one of the prerequisites of great breakthroughs. To paraphrase much of this literature: to create a big idea, it takes a bee. One of the strongest *positive* arguments for a generalist education is, therefore, that it is likely to increase creativity, which itself commands an ever-growing premium in our knowledge economies. As University of Chicago psychologist Mihaly Csikszentmihalyi (1996, pp. 329-330) reminded us in an insightful study of 99 outstandingly creative individuals across all fields (including, incidentally, Stephen Jay Gould), "it is

[3] For a powerful recent study of the nature of the skills acquired by (future) workers in the economy and of the ways in which these skills are linked to the role of welfare state policies and economic competitiveness, see Estevez-Abe, Iversen and Soskice (2001), who reach a number of non-self-evident insights based on a simple distinction between three sorts of skills: *firm-specific*, *industry-specific,* and *general* skills. For classic studies on the economic benefits of specialization, see Hayek (1945) and Becker (1993). For a more critical view in the context of organizations, see Arrow (1974).

important to keep in mind that most breakthroughs are based on linking information that usually is not thought of as related. Integration, synthesis both across and within domains, is the norm rather than the exception. … This breadth, this interest that overflows the limits of a given domain, is one of the most important qualities that current schooling and socialization are in danger of stamping out. If nothing else, [his] study should renew our determination that narrow specialization shall not prevail. It is not only bad for the soul but also reduces the likelihood of making creative contributions that will enrich the culture."[4] And in Arthur Koestler's (1964, p. 120) view, the creative act is essentially about bi-sociation across different fields: it is not an act of creation "in the sense of the Old Testament. It does not create something out of nothing; it uncovers, selects, re-shuffles, combines, synthetizes already existing facts, ideas, faculties, skills. The more familiar the parts, the more striking the new whole. … The Latin verb *cogito* for 'to think' etymologically means 'to shake together'. St. Augustine had already noticed that and also observed that *intelligo* means 'to select among.'"

Consilience, properly conceived: "Jumping together" science and the humanities?

A related topic that receives rather less attention from Barzun regards the relationship between the sciences and the humanities. Only sporadic side-remarks are offered here, mainly in the book's second section, which is tellingly entitled "On the Two Ways of Knowing: History and Science." Barzun appears to follow Blaise Pascal in making a rather rigid distinction "between two orientations of the human mind: the intuitive and the scientific" (p. 21). Yet in educational matters, it is hard to imagine him disagreeing with John Dewey (1916, p. 286), who argued that education "should aim not at keeping science as a study of nature apart from literature as a record of human interests, but at cross-fertilizing both the natural sciences and the various human disciplines such as history, literature, economics, and politics." Dewey's ideas retain an obvious relevance for primary schools and high schools, although many would argue that scientific advances and ever-deepening specialization over the past ninety years have made these ideals much harder to accomplish today than they were in Dewey's time.

The current troubled relationship (read: the blatant mutual misunderstanding) between the sciences and the humanities lies at the heart of *The Hedgehog, the Fox and the Magister's Pox*. This is a historically illuminating, if at times normatively wishful, book-length plea for a "consilience of equal regard" between these two approaches to the creation and production of knowledge. The term consilience ("jumping together"), Gould explains, was originally coined in 1840 by William Whewell, the Oxford philosopher of science. It was later

[4] Other figures studied by Csikszentmihalyi (1996) included James Coleman, George Klein, Eva Zeisel, Ilya Prigogine, Jacob Rabinow, Linus Pauling, Subrahmanyan Chandrasekhar, Benjamin Spock, Manfred Eigen, Donald Campbell, Edward O Wilson, and Jonas Salk. Csikszentmihalyi (1996, p. 88) concludes quite unambiguously that generalism is the key to true creativity: "A large majority of our respondents were inspired by a tension in their domain that became obvious when looked at from the perspective of another domain. Even though they do not think of themselves as interdisciplinary, their best work bridges realms of ideas. Their histories tend to cast doubt on the wisdom of overspecialization, where bright young people are trained to become exclusive experts in one field and shun breadth like the plague."

somewhat inappropriately reclaimed in a book by Edward O. Wilson (1999), the evolutionary biologist. Writers such as Wilson (1975; 1978; 1999) have long put forward an assertive case for a unification under evolutionary principles of all human knowledge. This enterprise is based on the notion of reductionism (breaking the whole into its constituent subunits, even in the arts) and, therefore, homogeneity. In contrast, Gould argues that the sciences on the one hand, and the arts, religion and ethics on the other are irreducible but can mutually complement and inform one another.[5] In other words, they are separate but equal players in the great enterprise of wisdom-production.[6] Gould takes the reader on one of his trademark walking tours of ideas, surveying many historical instances of the often ludicrous dominance of either the humanistic or the scientific approach to knowledge and of the equally misguided conclusions reached by dichotomous modes of thought. He concludes that "the sciences and the humanities have everything to gain (and nothing to lose) from a consilience that respects the rich, inevitable, and worthy differences, but that also seeks to define the broader properties shared by any creative intellectual activity, but so discouraged and so often forced into invisibility by our senseless (or at least highly contingent) parsing of academic disciplines" (p. 259).

Gould concedes that the sciences can help us immeasurably in clarifying "is" questions. But, directly contradicting recently influential views by Wilson and other reductionists, he argues that the humanities will always be responsible for answering "ought" questions of ethics and morality. Interestingly, this lifelong advocate and outstanding practitioner of evolutionary explanations in science strongly insists that while science may enlighten us on the *anthropology* of morals (e.g., their frequency across cultures and their evolutionary causes), it has nothing to say, in principle, about the *morality* of morals. Similarly, Gould submits that while neuroscientists might one day give us a perfect understanding of the brain processes that occur while someone is listening to a piece by Handel, they will never be able to explicate the esthetic and emotional power that Handel's art can convey. Gould adds a blueprint for education to his scientific plea. In almost lyrical terms, he paints his educational ideal as consisting of a portfolio of flexible skills and a core of deep knowledge: "What can be more powerful than combining the virtue of a clear goal pursued relentlessly and without compromise (the way of the hedgehog), and the flexibility of a wide range of clever and distinct strategies for getting to the appointed place, so that someone or something manages to get through, whatever the vigilance and resourcefulness of an enemy (the way of

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[5] For instance, Gould regards the "consilience of equal regard between science and the humanities as a combination of great power for our small world of scholars because such a joining of truly independent entities, always in close and mutually reinforcing contact, and always pursuing a common goal of fostering the ways and means of human intellect, so deftly combines the different strengths of the fox and the hedgehog that we must win (or at least prevail) so long as we don't allow the detractors to break our common resolve and bond" (p. 262).

[6] Not even *that* separate sometimes. In one of many entertaining asides, Gould analyzes writings by Vladimir Nabokov to demonstrate that Nabokov's use of butterfly imagery in his literary works was thanks to his scientific work as a butterfly taxonomist at Harvard's Department of Comparative Zoology. Interestingly, Gould points out that Nabokov explicitly dismissed any symbolical or allegorical interpretations of his literary use of butterfly images. Instead, Nabokov joined literature and science in highlighting their mutual love of the beauty of material detail, accurately observed and precisely described.

the fox)?" (p. 262). The analogy between knowledge production and knowledge transmission is clear:

> One need hardly go beyond the human pair bond (and its status as a base for the villages that raise our children) to appreciate both the structure and potential fruitfulness of different roles for common purposes, or nonfusion for proper diffusion. My preference for foxes and hedgehogs over labyrinths and chains, as central images for relationships between the sciences and humanities, stems from these objections and distinctions. We do, as scholars, embrace a unity of purpose that might be compared with the well-raised child (filled with knowledge, decency, and discernment, all different but all related to the single goal of wisdom, the hedgehog's one truly great thing). But we also recognize that many irreducibly different routes, corresponding to the fox's plethora of working pathways, lead to this greatest of all goals. No preferred yellow brick road can bring us to the Emerald City, a mere confusion of wizardry in any case; but … we can fashion a coat of many colors, with each patch necessary to make the completed, glorious cloak of wisdom. Or ... : *e pluribus unum* (Gould, 2003, pp. 235-236).

Gould's imagery sets an important benchmark for educational philosophy and for societies aiming to tap the highest potential of human diversity, nurtured by common values. But, as the Belgian poet Willem Elsschot wrote, the road from dream to act is rife with laws and practical objections. For instance, excellent teachers seem to be an obvious requirement for pursuing an education based on flexible sets of skills around a core of detailed knowledge. But they are a variable that cannot just be legislated, let alone willed, into existence. Political economists have rightly pointed out that the very institutional set-up of our school system may itself prevent a radical overhauling of teachings and teachers, however beneficial such an overhaul might be for students and parents (Chubb and Moe, 1990, 1997; Hoxby, 1996; Moe, 2000).

Back to the classics? Reasserting an old-fashioned argument

As Gould reminds us, a favorite theme continuously revisited by bees and foxes regards the great classic works. In the Barzun book, the entire fifth section as well as a number of essays in other sections are devoted to the author's longstanding dialogue with (and rehabilitation of) admired figures and works of the past. Some of the most noteworthy essays discuss thinkers and artists such as Johann Wolfgang von Goethe, Jonathan Swift, Denis Diderot, Oscar Wilde, Bernard Shaw, Walter Bahegot, Lionel Trilling, and Henry and William James.[7] Barzun

[7] While some of these essays were originally meant merely as introductions for the benefit of a larger audience, others provide genuinely valuable insights and comparisons. For instance, contrasting William James's notion of consciousness with that of John Dewey, Barzun notes that for James, "Consciousness is clearly involuntary: not I think but it thinks, whether I want to or not. Languages record an awareness of the fact in expressions like methinks, il m'en souvient, es dűnkt mich, and again in 'it occurs to me,' 'the idea crossed my mind,' and so on. I think is not parallel to I walk. …

builds a characteristically opinionated case for a greater emphasis in our schools on the Great Books of literature and history. Unfashionably, he does so on esthetic and moral grounds, and because these works inspire us and make us more human. In a piece from 1971 that is simply entitled "The Centrality of Reading," he points out that "reading and its necessary twin, writing, constitute not merely an ability but a power. I mean by the distinction that reading is not just a device by which we are reached and reach others for practical ends. It is also and far more importantly a mode of incarnating and shaping thought" (p. 397).[8] Barzun here adds another eloquent voice to the already lofty chorus composed of some of our best writers and critics who have called for a return to the classics.[9] In his controversial 1980s wake-up call on American education, *The Closing of the American Mind*, Allan Bloom (1987, p. 344) similarly argued that "Of course the only serious solution [in the current problem with education] is the one that is almost universally rejected: the good old Great Books approach, in which a liberal education means reading certain generally recognized classic texts, just reading them, letting them dictate what the questions are and the method of approaching them—not forcing them into categories we make up, not treating them as historical problems, but trying to read them as the authors wished them to be read." However, more convincingly than conservative philosophers like Bloom (1987) and liberal proponents of the democratic and civic mission of education such as Gutmann (1987) and Barber (1992), Barzun emphasizes that a general education also promises very concrete, if always elusive, benefits. As he argued previously in *Teacher in America* (1945, p. 33), to teach the classics might be our best way of imparting values by indirect means, since any direct attempt is doomed to be counterproductive: "Would any faculty offer a course called 'Wit, Elementary and Advanced'? Or 'Firm Principles, Old and New'? Then why speak of teaching toleration? … You could not hope to make a genuine course of study by stringing together two dozen instances of struggle for toleration. At the third instance you would lose your class. Why? Because in a real subject there must be order, progress, increasing complexity, new principles at every step. This in turn is true because the human mind is built on dramatic lines. It wants plot, climax, and dénouement. Without them, attention wanders and teaching dies." Barzun insists that students in the humanities must be made to see that their studies are in fact intensely *practical*:

The mind according to James is a stream composed of waves flowing endlessly without gaps. Each wave (or pulse) presents a crest or focus of intensity surrounded by a fringe. The focus is clear, the fringe dimmer, and what is in the fringe urges forward to become the next clear focus as the previous one fades out. We record this phenomenon in many of our ways of speech: We refer to what is 'uppermost' in our minds; we know and speak of what 'interests' us and can name what 'holds our attention': all these words imply the focus. Compared with it, the fringe, aura, or margin is vague and thus not readily namable. It takes the power of a poet to evoke the fringe by offering a series of images to focus on." (pp. 36-37).

[8] Or as Bertrand Russell (1926, p. 23) put it: "To know something of great literature, something of world history, something of music and painting and architecture, is essential if the life of imagination is to be fully developed. And it is only through imagination that men become aware of what the world might be; without it, 'progress' would become mechanical and trivial." Similarly, Nussbaum (1997) argues that the classics can expand our narrative imagination and active empathy with others.

[9] Particularly inspiring examples are Nabokov (1980), Calvino (2000) and Harold Bloom (2000). Nussbaum (1997) offers a strong philosophical defense of classic literature in the context of contemporary liberal education.

> The humanities properly acquired will effect in them a transformation of mind and character which cannot be described, but which they will find useful all life long. Just as important as making this prediction is to refrain from making false promises. Studying the humanities will not make one more ethical, more tolerant, more cheerful, more loyal. … It may well contribute to these happy results, but only indirectly, through a better-organized mind, capable of inquiring and distinguishing false from true and fact from opinion; a mind enhanced in its ability to write, read, and compute; a mind attentive to the world and open to good influences, if only because of a trained curiosity and quiet self-confidence. All these things are likely results; they are not guaranteed. Life, like medicine, offers no certainties, but we go on living and going to the doctor's (p. 432).

The "richer life" argument and the "richer imagination" argument for supporting generalism and a liberal education jointly indicate how the classics might help provide a source of much-needed common ground and mutual goodwill in the increasingly pluralistic and rapidly specializing market societies of the twenty-first century. In Barzun's own view, "The need for a body of common knowledge and common references does not disappear when a society is pluralistic. On the contrary, it grows more necessary, so that people of different origins and occupation may quickly find familiar ground and, as we say, speak a common language. … Otherwise, with the unstoppable march of specialization, the individual mind is doomed to solitude, and the individual heart is drying up" (p. 419). On this topic, Stephen Jay Gould, the teacher, is on the same wavelength:

> No one celebrates diversity more than evolutionary biologists like myself; we love every one of those million beetle species, every variation in every scale on a butterfly's wing, every nuance in the coloration of each feather on a peacock. But without some common mooring, we cannot talk to each other. And if we cannot talk, we cannot bargain, compromise, and understand. I am sad that I can no longer cite the most common lines from Shakespeare or the Bible in class, and hold any hope for majority recognition. I am troubled that the primary lingua franca of shared culture may now be rock music of the last decade—not because I regard the genre as inherently unworthy, but because I know that the language will soon change and therefore sow more barriers to intelligibility across generations. I am worried that people with inadequate knowledge of the history and literature of their culture will ultimately become entirely self-referential, like science-fiction's most telling symbol (from E.A. Abott's *Flatland*…)—the happy fool who lives in a one-dimensional world of pointland, and thinks he knows everything because he forms his own entire universe. In this sense, the bee criticizes the spider correctly—an ephemeral cobweb "four inches round" can only provide a paltry sample of our big and beautiful world (pp. 150-151).

Diversity within a commonly understood framework, depth, and width, as a recipe for integrated excellence—this could be a fitting epitaph for Gould. Yet these views, while compelling, provide at best an incomplete blueprint for education today. A topic I would have liked to see addressed more extensively in both books is the question of how to combine a general education that includes a rightful place for the classics with an approach that prepares pupils at all levels for a near-certain future of fast and wide-ranging change. As we have seen, Einstein earmarked adaptability to change as a core benchmark for education half a century ago. The urgent need to tackle this issue head-on in education has only increased in past decades. And it will continue to do so, as rampant globalization, economic competition from emerging powers such as China and India, higher geographical and occupational mobility, declining family structures and changing social ties will combine with exponentially changing technologies to make our pupils' likely futures tangibly different from the lives of current generations. Arguably, the best of our past ought to be combined in education with a flexible openness to, and ability to cope with, what is new.[10]

This said, the classics *are* in dire need of eloquent standard-bearers amidst all the contemporary clamor for the new and the practical. At the same time, multiculturalists, postmodernists and relativists have, under various guises, questioned the universally "human" pretensions and the alleged "white" or "Western" bias of the canon (for a robust critique of such perspectives, see Nussbaum, 1997). Others have argued that schools should encourage even the youngest readers to make their own "autonomous" decisions based on which books they think are best or "most fun." These objections are often more self-serving than substantial, especially if we can agree that there are threshold levels of knowledge to be reached before any complex book, from any culture, can be fully and maturely enjoyed (Vanhuysse and Sabbagh, 2005). Italo Calvino (2000, p. 6), for one, acknowledged that there is little point in reading the classics out of a mere sense of duty or respect—*except at school*: "school has to teach you to know, whether you like it or not, a certain number of classics amongst which (or by using them as a benchmark) you will later recognize 'your' own classics. School is obliged to enable you to make your own choice; but the only choices which count are those which you take after or outside of any schooling." To be sure, the teaching of the great books in our schools is undoubtedly rendered harder today, as literacy standards seem to be in decline and TV and other visual and commercial media appear increasingly to be winning the battle for the attention of the young. Like other enthusiasts, Barzun can be rightly criticized for underestimating this problem. Yet no one does a better job in elucidating the other side of the coin—*identifying* classic works and making the case for their universal and enduring *value*. In one of the best arguments in support of the classics I have come across, and one which merits lengthy quotation, Barzun rhetorically asks:

> But why, after all, learn to read differently by tackling the classics? The answer is simple: to live in a wider world. Wider than what? Wider than the

[10] For an interesting early attempt to tackle these issues, see Toffler (1970; 1974).

> one that comes through the routine of our material lives and though the paper and the factual magazines … wider also than friends' and neighbors' plans and gossip; wider especially than one's business or profession. For nothing is more narrowing than one's own shop, and it grows ever more so as one bends the mind and energies to succeed. This is particularly true today, when each profession has become a cluster of specialties continually subdividing. … [Contemporary] work itself is a struggle with a mass of jargon, conventions, and numbers that have no meaning outside the specialty. … Since [the modern world] is a game and a make-believe, anybody who wants access to human life and its possibilities – to thoughts and feelings as they occur natively or by deep reflection – must use another channel. One such channel can be cut by using the classics of literature and philosophy; a second can be made through the fine arts and music. I say "made" and "cut" not "found," because of that "thickness" to which I keep coming back. The great works do not yield their cargo on demand; but if one reads them with concentration … the effort gives us possession of a vast store of vicarious experience; we come face to face with the whole range of perception that mankind has attained and that is denied by our unavoidably artificial existence. Though this experience we escape from the prison cell, professional or business or suburban. It is like gaining a second life. ... This enlargement of vision has a useful by-product. The same habits of persistent scrutiny, of sensitivity to what is not said but implied, of patient meditation after encountering what strange – all enhance the power of judging life situations and human character. (pp. 415-417).

A related and more positive argument in favor of a generalist or classic education is that because it captures better and more recognizably the essence of human life, and perhaps because it is mediated via esthetic or other emotions, the classics simply are conducive to *better learning.* Herbert Simon (1983) argued that books like Koestler's *Darkness at Noon* and Tolstoy's *War and Peace,* and authors like Proust and Chekhov, are better than any given textbook or social science treatise in conveying the essence of, respectively, show trials, war, and the human personality. Accordingly, Simon made a positive case for the traditional liberal arts curriculum in education on the grounds that pupils would learn better and remember longer: "most human beings are able to attend to issues longer, to think harder about them, to receive deeper impressions that last longer, if information is presented in a context of emotion—a sort of hot dressing—than if it is presented wholly without affect." In the same vein, in a piece from 1987, Barzun (pp. 420-421) argues that "to learn 'the facts' about Aristotle and Luther and Alexander Hamilton and 4,997 others, all in the air, so to speak, would be a gigantic feat of memorization, whereas to learn these facts and much else while studying history and reading the classics is by comparison very easy. The facts then stick in the mind like the names of the streets around your house: you never set out to learn them, they come as part of your direct acquaintance with the place. This difference seems to me all-important; and it points to another use of the classics: they educate you as you read

—provided you read them in the right manner and at the right time. … the classics must be met at the latest in college."

Conclusions

While the books under review were not written by education specialists as such, they offer stimulating insights into the role of the classics and of a generalist education. The *Jacques Barzun Reader* is a splendid sampler of thoughts and ideas on a breathtaking range of topics. As Barzun reminds us time and again, the very value of history and the humanities lies in their ability to provide insights that are often more intuitive and less testable, but not therefore less precise. Thus, "For history, the reward of eluding method is to escape abstraction. … history owns an affinity with art, poetry, philosophy, and religion, to which few would deny the possibility of precision and truth though they are untestable by rule" (p. 24). The book is therefore highly recommended to anyone interested in cultural history, the philosophy of education and the humanities, and the life of the mind. Some of its gaps, notably the relationship between the sciences and the humanities, are filled by Gould's idiosyncratic *The Hedgehog, the Fox and the Magister's Pox*—a passionate plea for a fruitful consilience between the sciences and the humanities, based on mutual respect. Coining a phrase, Gould argues that we should "hybridize the bee and the spider—and then, in good Darwinian fashion, select for the best traits of both parents in a rigorous program of good breeding (education)" (pp. 149-150). As I have pointed out, some crucial issues remain unaddressed in both books, notably the economic and scientific role of creativity and the psychological preparation for future change. Importantly, however, in times of an increasing (and increasingly early) specialization and instrumentalization of knowledge transmission in schools, both authors amply illustrate the great value that can be added by a bee's and a fox's outlook on knowledge. Written by learned and delightfully opinionated scientists, these books stand as a vigorous defense of the continuing importance of teaching a knowledge of what is best in our cultural heritage, and of the invaluable contribution of the arts and the humanities to enriching our lives. For that, they deserve to be praised in our journals, and perused in our classrooms.

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Editors: Gene V Glass, Kate Corby, Gustavo Fischman