

VIEWPOINT

WHAT'S SO GREAT ABOUT 20/20?

OR...

THE PLIGHT OF NEARSIGHTEDLY-CHALLENGED INDIVIDUALS

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Abstract

This article explores the overemphasis of 20/20 distance visual acuity. A distinction is made between nearsightedness and myopia. Alternate ways of conceptualizing and dealing with nearsightedness are presented.

Key Words

nearsightedness, myopia, perception, suppression

Over 100 years ago, Snellen determined that “normal” distance visual acuity is 20/20. There is probably something about that level of resolution that is actually useful for various activities. However, it is not always necessary, nor do many people spend most of their waking hours making use of 20/20 distance acuity. More and more people are unable to achieve 20/20 distance acuity in their natural state. There are many possible reasons for this. The most common reason for this is probably nearsightedness. I have come to conceptualize nearsightedness as the inability to achieve maximum distance acuity (20/20) without the aid of ophthalmic lenses, or now refractive surgery. I further propose that myopia, while related to nearsightedness, is something different: it is a psychological/behavioral profile that includes introversion, fear, need for control, a preference for academic over athletic pursuits, and is usually a product of fully optically-compensating nearsightedness. A given individual may have any or all of these characteristics to varying degrees.

I have long been intrigued by the field of quantum physics. While this subject might seem to have no connection to the topic of nearsightedness, I believe I have found one. Many who work in quantum physics seem to have an openness that allows them to reach out beyond their chosen field, into areas seemingly unrelated to their life's work. There is an emphasis on the importance of concepts such as context, interconnection, and interaction.¹

The current state-of-the-art in physics tells us that the world is not made up of discreet, distinct entities.¹⁻³ Our world comprises an invisible, whirling dervish of wavicles, and forces. Wavicles are energy/matter dualities. The term is an attempt to convey the concept that matter and energy are more than just linked. They are essentially one and the same entity, sometimes seeming to be more matter than energy, other times more energy than matter. This resulted from Einstein's famous equation, $E=mc^2$ which provided the insight for a better understanding of this relationship. The forces are basically invisible rules-of-the-game providing organization to the movements and relationships of these wavicles. It is also clear that even the most solid matter is mostly empty space. I don't wish to delve any more deeply into the actual physics of this, even if I really could. The bottom line is that everything basically blends into everything else in one way or another. This concept, long a core element in my thinking, suddenly made apparent a connection to the visual process, and nearsightedness in particular, that seemed at least entertaining if not, in fact, worth pursuing.

The world described by quantum physics and the world as it is seen under the influence of nearsightedness suddenly collided. The borders between these two concepts disappeared for a time. This notion gathered momentum as, around this same time, I began reading a book entitled, *Fire In The Mind*⁴ which gave support to this burgeoning idea. I am certain the author was not addressing any

optometric issues. However, some of his ideas and particularly his choice of words rang true. I'd like to include a few quotes:

But how hard it is to appreciate that one person's distortion can be another person's reality, that we look at the world through different eyeglasses...p.13

Of course, an important question is to what degree the orders we observe are out in the world and to what degree they are imposed by our nervous systems, the invisible spectacles that refract everything we see. p.18

Our brains are wired to see order, but we are prisoners of our nervous systems, cursed with never knowing when we are seeing truths out there in the universe and when we are merely inventing elaborate architectures. p.21

In any of our grand creations, there may be cracks in the foundations, niches in which heresies can grow. And it is by overturning monuments that new pictures of the universe emerge, new orthodoxies whose cracks will form different patterns. Whether there is hope of converging asymptotically on something called truth depends on whether you believe, like Plato, that mathematics and natural laws exist in and of themselves on some ethereal plane, or whether you believe they are human inventions - at best, an intersection between the way the world is and the way our nervous systems happened to evolve. p. 24

In building a theory of the world, it helps if one's vision is a little blurry. p.44

The last quote embodies the concept to which I was heading. As modern physics tells us, the world is not made up of discreet, distinct entities; therefore nearsightedness provides an opportunity to see the world more like it really is at its deepest levels. And, without such discreet boundaries and distinct entities, maybe it is actually a superior visual mode, or at least an advantage in some way. Of course it took someone as nearsighted as myself to ask the obvious question at this point: Are nearsighted people actually superior beings being kept at bay by a world of frightened, uptight emmetropes? I have-

n't decided where those of the farsighted persuasion fit in this grand scheme. Further, since there is a significant prevalence of nearsightedness in virtually all civilized societies, it should be considered that there might be some evolutionary advantage to the ability to see this way.

Some have proposed that this advantage is related to the fact that so much of our activity is devoted to reading printed material, and now computers. There are many studies that point to a connection between the prevalence of nearsightedness and level of education.⁵⁻⁹ This does not necessarily relate to intelligence, but rather the quantity of time spent in front of written material. While it is not my place to prove or disprove the possible connection between nearsightedness and intelligence, I cannot deny the likelihood. However, it is not my feeling that the advantage to being nearsighted is involved with the need for prolonged exposure to two-dimensional surfaces for the purpose of gathering information. The advantage may be something very different.

Perhaps nearsighted people are simply favored with a special mode of perception that provides opportunities to experience the vast web of connectivity that comprises the objective world. Is it possible that people, places and things are more like wavicles, dancing about and through each other? This is opposed to the assumption (and consequent behavior) that each of us is our own solar system or galaxy, completely separate and independent from each other and everything around us unless we decide to interact. Our culture is so intent on scrutinizing one detail after another, often taking things out of context. We have spent hundreds of years ignoring and denying the interconnectedness of all things, preferring a myopic pattern of thought/behavior that assures us that everything is separate, that we live in a black and white world. Nearsightedness permits one to see things as a blurry mass of one thing blending into another, seeing more of the grayness around us. As the borders between things become less clear, the *interactions* between them become more defined. Maybe nearsightedness is nature's way of offsetting myopic behavior by defusing its intensity. Therefore, masking the nearsightedness only serves to exacerbate myopic behavior.

The problem is this nearsighted condition could lead to a "blurry" type of behav-

ior that our 20/20 based myopic society does not condone. Consequently, when one exhibits or is suspected of becoming nearsighted, "faulty vision" is suspected (consider that a myopic society finds myopic behavior comforting but has problems accepting nearsightedness); that is, the person is considered to have a defect. Almost invariably, the defect, nearsightedness, is diagnosed and "corrective" lenses prescribed. The world is no longer blurry when the lenses are being worn, and what often results is some or all of the more accepted myopic behaviors previously described. So the myopic behavior, which is detail oriented and little concerned with issues like context, is manifested in order to counteract the nearsighted seeing pattern, which can be considered to de-emphasize the details in favor of enhancing the interconnectedness of the world's parts. Included in the myopic profile is a need to please others. The drive to accomplish this goal often leads to nearsightedness as a result of the adaptations consequent to visual stress.

The so-called "corrective" lenses correct nothing. Indeed, they foster the "deviant" myopic behaviors.¹⁰ They simply serve to provide a pretense that the person is, and sees in the 20/20 mode. If these lenses corrected the condition, there would be gradual improvement instead of continued decline in acuity. Perhaps the progression of nearsightedness indicates some deep-seated need for some individuals to maintain their nearsighted capability in the face of repeated attempts to suppress their superior abilities.

In some ways it is a matter of convenience to conceive the world as being made up of discreet, clearly distinguishable fragments. On the macroscopic level the world does appear and feel like solid, discreet pieces. It is much easier, not to mention more obvious, to experience the world as bits and pieces, especially with the pace, demands and philosophy of our culture. Current thinking implies that what was previously assumed to be a concrete, objective world cannot even be said to exist outside of the subjective act of observation.^{1,2,3} "In other words, the act of seeing must include the perceiver of the image. From quantum physics we have learned that the perceiver has a choice given to him by the wave-particle duality of matter. He can look at the wave, or gestalt, view of matter, or he can look at the

“particle,” or detail, view of matter. What he perceives depends on how he goes about looking.”¹¹

Over 200 years ago, in *The Marriage of Heaven and Hell* William Blake wrote, “If the doors of perception were cleansed every thing would appear to man as it is, infinite. For man has closed himself up, till he sees all things thro’ chinks of his cavern.”¹² In the 1950s, in *The Doors of Perception*, Aldous Huxley stated that our system of knowledge is not so much about gathering information as much as it is about suppressing information. We narrow down our focus to concentrate on the things we decide are important or useful, or maybe just tolerable.¹³ This narrowing down of desirable stimuli is an important tool for both physical and psychological survival.³ It is not however the only way of dealing with the world at large, nor is it guaranteed to be the best at all times. It is likely that this filtering process occurred randomly, and built upon itself over time. That is, the winnowing of “unimportant” aspects of the environment was not necessarily based on any particular criteria other than shielding us “from the endless flux, the seething, ceaseless commotion both outside and among our neurons, the fact that neither we nor the world are ever the same from one moment to the next.”³ (p.22). We did the best we could, not having a handy guidebook describing all the factors and all the possible consequences of our choices.

This is similar to the way we adapt in response to visually challenging situations. We do the best we can, based on the available information, to enable ourselves to function visually at a level that is sufficient to cope with the task. There are many possibilities from which to choose. We can modify the way we move our eyes, the way we focus, the way we behave binocularly and our level of peripheral awareness. It is possible to manipulate (usually unconsciously) any or all of these aspects of the visual process in order to deal with our environment more successfully. We undergo what are almost random fluctuations until we stumble upon something that seems to work. As we know, this often results in overall, long-term visual inefficiency that must be modified through the use of vision enhancing lenses and visual training.

I am reminded of an idea presented by a visiting professor in optometry school:

We learn about a wide variety of topics early on, and throughout the primary grades. As our education continues, we narrow our focus more and more, emphasizing certain areas of study as we decide what we want to do with our lives. Each level of education is aimed more precisely at a particular field of interest. So, we learn more and more about less and less. One wishes to become a specialist, learning even more about even less, until one becomes an expert, who knows absolutely everything about absolutely nothing.

In the beginner’s mind there are many possibilities. In the expert’s mind there are few.¹⁴ (p.44)

*If the quantum theorists are right, we and the classical world we live in exist because it is impossible to be so acute in processing information. Information-gathering-and-utilizing systems (IGUSes) can arise because it is possible to ignore a huge amount of detail, to engage in coarse-graining. We partition the universe into an area of interest and an environment to which we can banish excess information. And so we can make rough predictions. IGUSes exist by virtue of this myopia, this inherent inability to keep track of every detail. If you know everything, you know nothing.*⁴ (p.177)

It seems likely that ancient humans were able to perceive the world around them in a very different way. Somehow they were able to figure out everything necessary to survive. There was no instruction manual. There were no interpretive signs labeling the different plants, explaining what each one did and how to make use of them. We tend to attribute their ability to understand their environment to some system of trial and error. This is a safe explanation for someone who has had no exposure to other concepts. The odds against surviving en masse through trial and error for finding food and medicines would have to be high.

The ancients probably had some ability to process information differently than we typically do in our present state. They were able to derive meaning from their environment with some degree of certainty and safety. This might be considered a peripheral kind of awareness today, and it may have been just as important to overall

survival as peripheral visual awareness is to overall visual “survival”. This helped immeasurably in their attempt to survive, not initially knowing the things we now take for granted. This helped them to determine which plants were safe to consume, which were helpful in treating illness, and which ones should be used for which conditions.¹⁵ We now synthesize many different drugs based on their knowledge of plants and the medicines they developed. This has only recently received the acknowledgment and attention it deserves.

Carlos Castaneda, in his series of books about his apprenticeship under the Yaqui Indian teacher Don Juan Matus, was taught that animals perceive energy, for example, when hunting their prey, helping them to know which would be the easiest catch. He too learned to see in this way.¹⁶ These are the kinds of things that a higher percentage of people was able to do nearer the dawn of humanity. These tasks involve perceiving differently, perhaps seeing more deeply into things. Certain people seem able to see and work with energetic emanations, or auras. Perhaps this was quite commonplace in days gone by. As we have evolved culturally, not to mention technologically, we have determined that this is too complex and confusing to deal with on a moment-by-moment basis. It has also been generally considered that people who do experience these things are just a bit strange, or they are making this up to get attention. It is often difficult for us to accept that such things really exist. We have therefore reduced the amount of information with which we knowingly interact in order to make life simpler and more manageable in the moment.

As behavioral optometrists we understand that visual adaptations can be appropriate to perform our various visual tasks, at the moment. The practice of behavioral optometry is based on the fact that these same adaptations may often lead to overall, long-term visual inefficiency. Becoming nearsighted is, in most cases, a functional adaptation to a visually challenging situation. In our culture, it is a good way to survive visually speaking, to some degree. Nothing comes without a price however, and that which is compromised to this end leads to a reduction in overall visual performance.¹⁷

A good example comes from a young woman, in her early twenties who came to me for a visual evaluation, complaining of increasing nearsightedness. She was in her third year of a four-year program for occupational therapy, and was also playing semi-pro tennis. Her nearsightedness had begun about two years earlier. She was in a visually demanding curriculum and as time went on she began having trouble seeing in the distance. She went for an eye exam (unaided acuity 20/50 OU) and was prescribed lenses for compound myopic astigmatism (OD -1.50 -2.00x90; OS -1.00 -0.50x70). To make a long story short, behavioral vision care made sense to her. She began visual training, wore stress-relieving lenses and experienced excellent results. Early in the VT program I learned that her tennis game began suffering around the same time she started wearing glasses. Vision is more about playing tennis than staring at textbooks. That may seem unfair to say, especially in our current environment. The point is that vision is primarily about movement, cultural biases aside. In order to increase effectivity in one area of visual performance (reading), this young woman had to give up overall visual performance (tennis). Fortunately, her commitment to tennis and VT resulted in the ability to have the best of both worlds after all was said and done.

We all suppress visual information on an ongoing basis,³ because it is easier than constantly dealing with physiological diplopia. We, hopefully, become so adept at this that many of us are quite surprised when we are guided into experiencing physiological diplopia, as though for the first time, under appropriate visual training conditions. We often suppress peripheral information. Visual stress leads many people to shrink their visual environment so there is less information to contend with.¹⁷ We also learn very early, and typically very well, how to suppress thoughts and emotions with which we would rather not involve ourselves constantly, or ever. Similarly, we suppress other types of information on such a regular basis that we behave as if the fact that we suppress something means that it doesn't exist, like a young child who covers her eyes certain that she is invisible to those around her. It is also important to realize that the act of suppression takes effort.^{17,18} Perhaps the amount of effort decreases as we persist in

the act, but it does remain. It may take a different form, but somewhere inside we know what is really there, and what we are actively excluding or avoiding.¹⁹

We need to accept the possibility that there may be more than one way to see. Perhaps some ways of seeing are appropriate for some circumstances, and other ways appropriate for other circumstances. Nearsighted people could easily be considered as having the advantage of being able to see in a way that is not readily accessible to the average person. In any event, a balance must be achieved, utilizing various aspects of the visual process in diverse ways;¹⁷ this moment accentuating one aspect, that moment another, keeping things flexible and always at the ready as demands change. It is also important to remember that there are many aspects of the visual process, of which acuity is but one. In all likelihood it is not even the most important one. We are limiting ourselves in many ways, at many points in the process of vision by attending so single-mindedly to visual acuity. It may be that visual acuity is not the beginning of the visual process, but more of an end result. We are taught that acuity is necessary to get the visual process off to a good start. My experience has shown that there is significant improvement in acuity once the entire visual process is enhanced. Once we are able to make greater use of all available visual information, of all aspects of the visual process, we see and perform better.

Clinical Considerations

The standard prescription for nearsightedness, obtained via the standard eye exam, is only optimal for a stationary, standardized patient viewing stationary, standardized symbols 20 feet and beyond, under standardized lighting conditions. Since the decision to prescribe this way is based on such limited information, the subsequent prescription is absolutely appropriate for very little of the overall needs of the typical wearer. What percentage of our time is actually spent doing the kinds of activities that truly require a prescription that is based strictly on distance acuity? For most people the kinds of activities that really require a full compensating prescription are somewhat limited. These might include night driving, driving in unfamiliar places, visiting museums, movie viewing, live performances,

sporting events and perhaps TV. We can also be fairly certain that situations presenting these same demands occur frequently throughout the average day. However, most of these are fairly short-lived situations. Naturally, many of us need to frequently shift our attention between various distances. However, for most of us, the majority of our viewing requirements are within 10-15 feet. Many of us spend significant amounts of time viewing within 1-4 feet. These are the activities that tend to persist for longer stretches of time. Lenses that fully compensate for reduced distance acuity are particularly inappropriate for viewing within 10 feet.

For people in school environments this may get a little trickier. A good deal of information is still presented on a board at the front of the room. In these situations it may be difficult to circumvent the need for compensatory lenses that are fairly strong. Obviously there are ways around this such as special seating, bifocals or dropping out of school. A prescription that is strictly designed to compensate for longer distance viewing does not begin to address the full scope of visual needs that confront us on a regular basis. In fact, such prescriptions tend to reduce overall efficiency in the long run. The important thing is that this is not a black and white issue. Many variables must be acknowledged and considered in the final decision. There may not be an easy answer, and there may be several answers. The point is, we must improve our efforts to assure that we are asking the right questions.

Optometry seems to be addicted to 20/20 distance acuity. It's not that I'm opposed to 20/20 acuity. I just want to be clear about how and why we get there. Actually, a large percentage of my patients can see 20/15 or better with or without lenses. They seek my care to address functional problems that are unrelated to acuity. Often, we are forcing otherwise decent people to *require* excessive distance acuity. Our obsession with 20/20 has created acuity addicts. This is because they believe what our profession believes: 20/20 acuity is perhaps the most important issue to be resolved during an eye exam. This is what our optometry schools teach us, and what we in turn teach the public. In my experience, some people will be impeded in their process of vision improvement if they continue to wear their

standard issue, full-strength, compensating lenses. They must be freed from their restrictive lenses to be able to adequately experience other aspects of the visual process. Full-strength compensating lenses tend to deaden the system, if not the whole person.²⁰ In some cases prescription and/or acuity reduction will only be a temporary measure. Once the overall goal has been achieved, the person can decide which lenses are optimal for their needs. They can begin to think about, and decide what level of acuity is appropriate for them, and when. In other cases there is an absolute trade-off. Maximum distance acuity cannot be had simultaneously with maximum visual comfort and efficiency. This may only be in the short term, but it may be sufficiently important to consider more routinely.

If people have become addicted to their full-strength prescription and what it “provides,” it can be difficult to incorporate a “reduced” lens as part of the enhancement process. It is almost certain that once a reduced prescription is worn for some period of time (a week or so, typically), the person will try on the old prescription and report that things do look clearer. However, they will also report that there is either a feeling of tension, or actual pain while looking through the old glasses for even a few minutes. Why would this happen? What does this say about what lenses bring about?

Some people, when confronted with the prospect of less than maximal acuity, experience concern or discomfort with the very idea. If they allow themselves to actually experience the difference for some time, while also doing training to improve the total visual process, they will in most cases begin to feel more comfortable with the reduced clarity. Spending more time with a reduced prescription will typically result in improved acuity with the weaker lenses, which can lead to further lens reductions. Once an “endpoint” is reached, a decision can be made whether to stay with reduced acuity on a more regular basis, or to have maximum acuity, which will typically be achieved with less lens power than previously worn.

The standard approach to prescribing lenses, still forcefully taught in all optometric schools, is woefully outdated for several reasons. It represents a very one-size-fits-all model, treating symptoms instead of people. Just because a per-

son is able to see clearly at all distances with certain lenses doesn't mean that this is the optimal management. This puts undue stress on the visual system more of the time than not. We are forcing people into a perceptual mode that is culturally imposed. As with most allopathic treatments, we are creating significant, undesirable side effects. However, in this case we are completely ignoring these side-effects thereby letting them continue unabated. Most people are quite unaware that there is even a problem. However, there are many times when people leave the optometrist's office with their new glasses complaining that they feel too strong, only to be told that they will get used to it. This usually does happen, but why don't we try to understand what causes this and if there is a better response than just summarily dismissing this issue.

Lenses are a type of medication, even though they are not taken internally. However, the subsequent perceptual side effects are greatly internalized. There is a compression of three dimensional space and of time.¹⁰ It seems certain that people adapt and compensate for these distortions, but at what cost. Our profession has put little effort into acknowledging, let alone coming to terms with these issues. Obviously, within the context of our culture, the ability to see extremely clearly comes in very handy much of the time. Some situations make it necessary. My feeling is that it is much more important to deal with overall functional health before attending to a fairly minor, secondary condition.

The nearsighted, farsighted, or astigmatic reality is that in the uncompensated state, the person does not see clearly under certain viewing conditions. While compensating for this may be useful for socially compulsive visual demands, it is a severe intrusion on the natural state. It is common practice for someone with undesirable refractive findings to be given full-strength compensating lenses for full time wear. This begins a downward spiral of visual performance along with what are, in most cases, negative behavioral adaptations. These changes tend to reduce the amount of available information from which one can gain meaningful input. People tend to feel that they can only get useful information from a precisely focused image. This reduces the ability to

utilize the many other cues to information that are always available.

This also leads to an undesirable distancing from significant aspects of the environment emotionally, and physically. There are distortions in how the outside world is seen as well as how the self is perceived.²¹ A person must learn to accept who and how they are, at least to some degree. This must be done in a natural state, not under the influence of something that creates such comprehensive changes. Once there is some sense of one's internal nature, the changes frequently seen with compensating lenses might be less disruptive, less detrimental to the individual. Optometrists should take more care and try to provide the highest level of treatment, taking the most complete information possible into account. Lenses do effect behavior. We must advance beyond the over-simplified approaches, which have become the standard of care. It is our gift to be able to provide options from which an educated patient or parent can choose.

In Closing...

People need options. Most only know what they are told, having neither the inclination, nor the time to research the situation. Conventional optometry, and I might add even to a greater degree, ophthalmology espouses the tenet that maximum monocular distance acuity is critical, therefore, the public believes this. People assume that there is only one way for lenses to work. They assume that the only issue is absolute clarity. I have found that there is often a trade-off. My preference is to prescribe lenses for near-sightedness that will provide about 20/40 distance acuity as the primary prescription. This generally is comfortable and effective for virtually all near and intermediate visual demands. As previously discussed, lenses that force maximum acuity do not always provide maximum comfort in the physical sense, i.e., a feeling of relaxation and lack of stress. I am not referring to the emotional comfort that comes with seeing clearly. This is, to some degree, a culturally imposed sensation that goes along with the arbitrary tenet that excessive acuity is required. I say excessive acuity because 20/20 is, in many ways, a culturally imposed requirement. Some people will opt for the lenses that provide reasonable acuity and maximum comfort rather than

the other way around. It should be their choice, not ours.

The primary issue should be to provide our patients with advice, based on complete optometric findings, the patient's observations, complaints and unique needs. Many of my patients seek my care because the previous doctor issued an optical prescription and assured that person it was what was needed. However, in these cases all the issues were not discussed; all options had not been considered; all the likely and potential consequences had not been explained. This is analogous to prescribing a pharmaceutical agent without informing the patient of its side effects, and not providing any options.

We have all been taught that seeing clearly is right and seeing less than clearly is wrong, i.e., some type of defect. Most eye care practitioners treat this as fact and use this fact as the single and absolute goal of lens prescribing and few question its absolute validity. In so doing, they never consider the possibility that blurred vision can be an advantage, an evolutionary leap forward, and not something to be eradicated at all costs. Questioning conventional wisdom is difficult for most, but not questioning it fosters complacency and can be an obstacle to optimal patient care. "We have found it of paramount importance that in order to progress we must recognize our ignorance and leave room for doubt. Scientific knowledge is a body of statements of varying degrees of certainty-some unsure, some nearly sure, but none absolutely certain...Our freedom to doubt was born out of a struggle against authority in the early days of science. It was a very deep and strong struggle: permit us to question -to doubt- to not be sure. I think that it is important that we do not forget this struggle and thus perhaps lose what we have gained. Herein lies a responsibility to society."²²

I believe that determining 20/20 as the optimal acuity was a step that was needed at the time to develop a concise clinical and psycho-optical standard. However, adhering to it as the gold standard has by and large precluded the benefits of seeing in a nice, mellow, fuzzy way, allowing the alleged borders within the environment to become less restrictive, allowing the so-called parts of the world to blend together. Sometimes this way of seeing can be refreshing.

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