

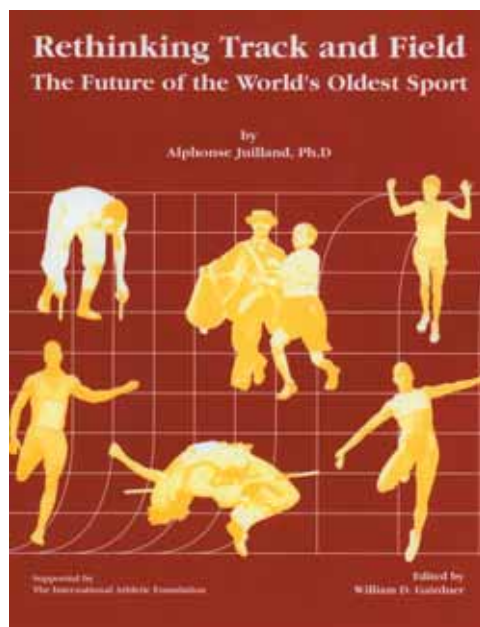
Rethinking Track and Field The Future of the World's Oldest Sport

By Alphonse Juillard; Edited by William D. Gardner

When first approached with the possibility of publishing the manuscript by the late Prof. Alphonse Juillard there were plenty of skeptics in the International Athletic Foundation. Some of Juillard's ideas seemed to be too innovative and ambitiously futuristic for a sport and institution steeped in history and tradition. However, behind Juillard's analysis can also be seen the intention to revitalize athletics in the new millennium. From this point of view Juillard's book appears to be less a provocation than a contribution to the healthy debate on the future of athletics.

Alphonse Juillard, a longtime professor at Stanford University and a good veteran performer in track and field, used to refer to himself as "the most revolutionary conservative" in the history of the sport he loved so well. His Gallic "esprit de contradiction" led him to question many of the rules governing track and field athletics. However, it was not only this spirit of contradiction which was the basis of Juillard's ideas, but also the observation that athletics has been losing spectator appeal in many nations over the last half century – especially in North America. Because of this loss of market share, athletics – according to Juillard – badly needs to be re-invented, or athletics is likely to continue suffering a loss of audience.

The greatest hindrance to change and re-invention sees Juillard in the strictness of rules governing athletics. Rules are, in his view, human impositions on nature. Though necessary, there should be as few as possi-



ble in his opinion. Every restriction ought to be justified, and every style, however unorthodox, declared legal as long as it relies exclusively on the resources of the human body without resorting to artificial aids. Juillard holds that rules which are purely artificial should be "committed to flames." Examples of such rules concern the jumping boards, throwing circles, and passing zones.

Rules are exactly the topic of the first chapter of his book, "The Challenge: Rethinking Old Events." Some of the proposals Juillard makes in this chapter are:

False starts should be abolished. A sprinter should be allowed to start when he wants, as long as no foot pressure is detect-

ed by the electronic pads before the moment the gun is fired. According to Juilland, an even better alternative would be laser-type start lines with false starts no longer being triggered by feet pressing "too soon" against the blocks, but by any part of the starter's body breaking the vertical laser plane before the gun is fired.

Just as laser beams along the start line would catch false starters better than feet pressing against starting blocks, breaking a laser beam at the finish line, no matter with which part of the finisher's body, would decide the order of the finishers more unambiguously than analyzing photographs.

Laser beams could also be used to measure high jumps more fairly. This way jumps or vaults that are higher than the "bar" could also be recognized.

High jumpers and pole vaulters should, according to Juilland, be ranked not on the basis of the highest jump but on the basis of the highest total of his or her valid (and set number of) jumps. By the way, this would revive a practice used in the early Olympiads of totalling jumps.

Juilland criticizes that in the high jump measuring performances from the ground up increasingly rewards the height of the jumpers to the detriment of their ability to jump and proposes that the title of a champion should be conferred on the person who really can jump the highest. To arrange this type of contest, it would suffice simply to subtract the jumper's height from the height of the jump. When measured this way, the best "jumper" in history so far is not Javier Sotomayor (2.45 m), but the American Franklin Jacobs, whose highest leap was over a bar set at 2.32 m. This is so simply because the 1.95 m tall Sotomayor was only able to clear a bar placed 49 cm above his head, while the 1.73 m tall Franklin was able to clear a bar 59 cm above his head.

Long and triple jumpers should be relieved from the "burden of the board" by having both long and triple jumps taken from a much broader board, say, one meter wide. This wider board could easily be covered with a viscous material that would temporarily retain foot imprints. This would facilitate measuring the "actual" jumps, by measuring from the foremost mark made by the take-off foot landed. Such a method would de-emphasize the skill required to hit the board and once and for all emphasize pure jumping ability.

Also, shot, discus, and hammer throwers should be given the same freedom enjoyed by javelin throwers. They should be allowed to throw as they please from behind a foul-line as long as they do not cross it before or after the release. This would open these events to more experimentation and surprise techniques.

In Chapter 2, "Gender War, or Gender Gap," Juilland proposes to let women compete with men on some occasions. This, he thinks, would add a lot of colour and excitement to a sport badly in need of innovation. The best way to make mixed-gender encounters interesting, to enable women to compete on equal footing with men, is to give them handicaps designed to "level the field of nature." One simple method to compensate for natural differences is to rely on the percentage differences between the women's and the men's world records. Starting women ahead of men in the running events, for example, would mean spectators would watch excitedly to see if the men could catch up. An even better alternative would be to have men run in outer lanes, thus increasing the distance men run in relation to that run by women. In order to allow mixed competitions in the jumping and throwing events, women should receive handicaps accordingly.

In Chapter 3, "Physical Attributes, Performance, & the Democracy of Sport," Juilland

explores the physical characteristics of champion athletes in terms of their height, weight and “density”, the latter being a rough measure of physical compactness obtained by dividing the athlete’s height by his or her weight.

Juillard’s aim in doing this is to decide who is really the best on a “pound-for-pound” basis, or according to out-put/performance in relation to physique. The result of Juillard’s analysis is that, although it can be maintained that athletics is the only truly global sport for individuals of any race, size and shape – unlike American football and basketball, for example –, this is not true when individual events are considered. The tendency to gigantism is especially overwhelming in the throwing events, where men and women, no matter how athletically talented, who weigh less than, say, 75 kilos get the message to stay away from this event. The shot put, for example, like American football, has become the private preserve of an “aristocracy of giants.”

To alleviate this unfair advantage for the much heavier athletes, Juillard proposes to weigh athletes before a competition, just as prizefighters before fights, and then divide the length of their throws by the weight of their bodies, in order to rank them in centimeters per kilo, or inches per pound. By this method, an 18 m put by a man weighing 80 kilos translates into 22.5 cm per kilo, and easily beats an equally distant put by his 100 kg competitor, who managed only 20 cm/kg.

Juillard is of the strong belief that the very first time any school were to mount such a new type of shot-put event, virtually every student in the school would want to participate.

Another equalization method would be to match the weight of the throwing implements with the weight-class of the thrower. Track and field already uses this

principle with differently-weighted implements for males and females, and for young as compared to older athletes. If this principle were used for open adult competition, it should be tried using the percentages that the various weightlifting weight-class records represent of the heaviest weightlifting category.

On a pound-for-pound basis, the number of average-sized people with great athletic potential is clearly far greater than the number of oversized people with great athletic potential, perhaps by a tenfold factor. As every sport seeking to increase its attractiveness to youth must draw its beginners from the same pool of raw human talent, there is a very pressing logic dictating that any sport that cares about its survival in a world that is extremely competitive for sports participation dollars, and for spectator dollars, should try to accommodate all size-types of potential athlete. To do anything less, is, according to Juillard, to ignore the sport market, and spurn the obvious source of a sport’s future success.

In Chapter 4, “The Best Athletes & Performances Ever, Regardless of Date or Event,” Juillard asks whether performances can be compared regardless of date and event. According to a simple-minded approach, faster, higher, or longer always means better than slower, lower, or shorter. From this point of view, a later record is by definition superior to an earlier one, and vice-versa. However, as Juillard points out, the factors involved in evaluating performances accomplished at different times in history are fairly complex.

Although records are mostly directly associated with the athletes who broke them, many other people contributed to making these athletes what they are, such as coaches, physicians, surgeons, chiropractors, physiotherapists, physiologists, psychologists, nutritionists, and so on. In addition, there are the engineers who invented fiber-

glass poles, developed synthetic surfaces, manufactured light shoes with superior traction, designed elevated landing pads and fancy new exercise machines, and conceived of superior conditioning techniques.

If all these factors are taken into account, then, under certain conditions, an earlier (slower, shorter or lower) record can be considered superior to a later (faster, longer or higher) one.

According to Juilland, there are at least three criteria that enable us to compare records, regardless of when they were broken. The first is degree of improvement: other things being equal, a performance which breaks an existing record by 2 seconds or 2% must be considered "better" than one which improves it by only half of these measures. Thus, Andersson's 4:02.6 over one mile, which bettered Hägg's 4:04.6 by two full seconds, or 0.8%, must be considered superior, from a rate-of-improvement point of view, to Bayi's much faster 3:51.0, which improved Ryan's 3:51 by one tenth of a second or 0.04%.

The second criterion is duration, which is in effect a mark of how well a record has resisted its challengers. Other things being equal, a record which lasts for two years must be considered superior to one which lasts only one. From this perspective, Landy's slower 3:58.0 mile record, which stayed on the books for three years, must be considered superior from the point of view of duration, to Ovett's 3:48.8, which survived barely more than one year.

The third criterion is anticipation. This has to do with how much earlier (or later) the record came before (or after) the date predicted by the event's exponential curve. On the basis of a coefficient which totalizes the positions the records occupy in terms of improvement, duration, and anticipation, the men's best record ever is Bob Beamon's 8.90m long jump in Mexico City 1968.

In Chapter 5, "About Breaking World Records: Easier in Some Events than Others," Juilland compares the minima required to break records and arrives at some surprising conclusions. Although current record minima are considered equivalent within the three basic disciplines of running, jumping and throwing (1/100 of a second for all running events, 1 centimeter for jumping, and 2 centimeters for throwing – except for the shot put, which allows 1 centimeter), they are not really equal when considered as a per-centage of the records within each discipline.

One reason is that runners, for example, can break any track record by one one-hundredth of a second, regardless of distance. But the roughly one decimeter improvement required for a new record in the 100m, when calculated as a percentage of that record and applied to an event such as the 10,000 m run, corresponds to 1.61 seconds, or some 10 meters distance on the ground ahead of the current record. Nevertheless, the IAAF will ratify as a record any 10,000 m improvement of less than 1 meter, or 0.006%. This means that, measured in percent-ages, the margin on the ground required to break the 100 m record is some 160 times more demanding than for the 10,000 m. Juilland argues that the fact that the 5,000 m and 10,000 m record have been broken nearly three times more often than the 100 m and 200 m, should have alerted us long ago that record-breaking minima based on equal fractions of time favour long distance runners and put sprinters at a disadvantage.

This is also true for jumping and throwing. Be it a race, a jump, or a throw, the underlying principle is the same: the shorter the time or distance of the performance, the more demanding the minimum required to break the record, and the longer the time or distance, the less demanding.

The problem is that current rules for breaking records relate equal time/distance

minima to unequal percentage minima. According to Juilland it would make more sense to equalize minima across disciplines and events in term of percentages, while unequalizing them in terms of seconds and centimeters.

Unfortunately, however, percentage minimas do not result in constants when converted into time or space, just as seconds and centimeters minima do not when converted into percentages. Moreover, percentages increase (track events) or decrease (field events), with record improvements.

For example, a 0.4% minimum increase, which was equal to 1cm when the High Jump record stood at 2m, would increase to 1.2 cm by the time the record got to two 2.50 m. Conversely, 1/10 of a second – which translates to 0.04% when the mile record was around 4 min – would grow progressively to 0.05% if, or rather when, the record gets to 3:30 min.

If the IAAF were to impose the same minimum of, say, 0.4% across the board, record improvements would require time minima ranging from 0.04 sec for the 100 m to 6.55 sec for the 10,000 m, and space minima ranging from 1cm for the High Jump to 7.5 cm for the Triple Jump; and from 9.4 cm for the Shot Put to 39 cm for the Javelin Throw.

However, Juilland must admit that it is unlikely that the IAAF will replace time/distance minima for breaking records with percentage minima. Therefore he suggests that for the sake of equity the least thing that should be done is to single out performances which have failed to improve the marks they broke by 0.4% – or whatever the minimum imposed by the IAAF – in official record books by an asterisk appended to 34 running records, 56 jumping records, and 2 throwing records.

In Chapter 6, "Trying New Events: The Need for Innovation," Juilland expresses his

contempt for records that are established through a kind of unfair assistance, that are not the outcome of genuine racing, but of "well-engineered set-ups in which a 'design-nated recordman' is carried by one or more 'designated rabbits' to a 'record.'"

In Juilland's opinion this is not so much a real record but a record for cleverness or for lack of real courage. For him, such a "race" is like having a wind-aided performance break a record that was established in still air. Juilland would like to see the effects of basically unfair situations eliminated as much as possible. As a solution he proposes solo races or strict time-trials instead of such set-ups.

In Chapter 7, "Why Do We Do What We Do? Some Anomalies, Curiosities, and Paradoxes?," Juilland, among other things, questions the logic behind the distances run in athletics. In his view, the 500 metre track, on which the second modern Olympic Games were contested, has clear advantages over the 400 metre track (e.g. not so tight lanes, larger infields, no necessity of "moving start" races). On 500 m tracks World Records could also be ratified for fractions or multiples of 500 m laps, at 125, 250, 500, 2-lap 1,000 m, a 4-lap 2,000 m, a 6-lap 3,000 m, a 10-lap 5,000 m, and a 20-lap 10,000 m. That, according to Juilland, would certainly be a more rational sequence of distances than those we call "classic" today.

The reasons for running the two shortest, as well as the two longest track races should also be re-examined. Juilland argues that if different events are supposed to test different abilities, then it seems clear that this test is not being met by our 100/200 m combination, for the 200 m clearly duplicates qualities already tested by the shorter sprint. A minimal decline in velocity suggests that one of the two longest races we now run may also be redundant. After all, the average decline in velocity from one classic event to another is about 3 km/h. But 22.45 km/h velocity of the 10,000 m

amounts to a deceleration a little more than 1 km/h relative to the 23.55 km/h of the 5,000 m. These athletes are running farther, but not much slower.

The redundancy hypothesis concerning these two distances is also supported by the number of long distance runners who held both world records. The 5,000/10,000 m double world record was held by Nurmi, Mäki, Zatopek, Iharos, Kuts, Clarke, Viren, Rono and Gebrselassie, more than twice the number of times the 1,500/5,000 double was achieved by Nurmi, Hägg, Iharos and Aouita.

Once again, if different races are run for the purpose of test-ing different abilities, than, according to Juillard, one cannot avoid concluding that the 10,000 m appears to duplicate almost exactly the talents already tested by the 5,000 m. So, the only legitimate argument for keeping the longer race may be to test staying power at a certain speed, but certainly not to test velocity.

The last Chapter of Juillard's book, "Peering into the Future: Bionic Men and Women?," deals with record projections and predictions. Based on the historical progression of just a few records, Juillard risks some new predictions.

Although the predictions at which he arrives are very interesting to read, there is only one prediction that seems to be fairly safe, namely that the exponential curves underlying the progression of the different records will soon flatten out rather rapidly and that at that point, to keep the records coming, timing and measurement will have to be in milliseconds and millimeters for every track and field event.

This is only a rough summary of what Juillard proposes to innovate and revitalise track and field athletics in an age which seems to have lost interest in 'cgs' sports and to draw more satisfaction from team

and fun sports. It may be doubted, however, whether all the suggestions and proposals made by Juillard are really suitable to realize his ambitions.

For example, Juillard seems to forget completely that athletics is much more than merely striving for records. Solo races against the clock would certainly be an interesting addition to the existing athletics program, but they should by no means replace traditional races. Why does Juillard not mention the excitement which can be created by races where the focus is not so much on a record but on who will be the winner? Such races can even be enjoyed by spectators with no basic knowledge whatsoever, just because it is a fight man against man. Why does he deride races with rabbits? (By the way, could not his proposal to start women ahead of the men in the running events with the men following and trying to catch up be regarded as a kind of institutionalization of rabbits?) Is it not interesting to watch whether a "designated recordman" is really able to realize his plan or whether he or she has played for too high stakes. Cleverness has always been a part of sports competition and if a runner wins because of his cleverness he or she does not deserve to be scorned.

Why should the 10,000 m be abolished just because there have been a great number of long distance runners who held both world records? There have clearly been more runners excelling in only one of these events. I do not think that spectators are much interested in the fact that at the elite level there is no great difference between these two distances in terms of average velocity. The fascinating point of the 10,000 m is simply to see whether a runner is able to maintain a speed close to his or her 5,000 m tempo for as long as double this distance. Whoever has run both distances knows that there is a psychological factor in the 10,000 m which is nonexistent in the shorter distance.

As for the high jump, I am sure that spectators would not be interested in invisible laser beams being cleared. They want to see a real bar being cleared or knocked down. One could even say that the aim of the high jump is not really to jump as high as possible, which could even be done without a bar, but to clear a bar which is set at a specific height. The fact that one jumper achieves this aim by jumping much higher than the bar while the other clears the bar only by a small margin does not alter the fact that both have managed to clear a bar set at an identical height.

Juillard is right when he says that in the high jump measuring performances from the ground up increasingly rewards the height of the jumpers to the detriment of their ability to jump. But are spectators really interested in the relative ability of jumpers? Are they not much more interested in spectacular heights to be cleared, no matter how tall the person is who does so? I doubt whether spectators would find it very interesting to watch a High Jump competition which is won by a jumper clearing a bar set at 2.32 m in front of a jumper clearing a bar set at a height of 2.40 m only because the latter is 9 cm taller than the first one, which they would not perceive, anyway.

Some of Juillard's proposals are nothing but entertaining to read. This, for example, applies to his argument that athletics is unfair because it is much easier to break the 10,000 m record than the 100 m record. Unfair to whom? I have never even heard of a 100 m sprinter reflecting about switching over to the 10,000 m because there he or she sees a greater chance of breaking the World Record.

However, all this criticism of Juillard's ideas is not intended to deter possible readers from picking up this book. I must clearly state that it was the most interesting and entertaining read which I have had for a long time.

Juillard is absolutely right in his premise that the attractiveness of track and field athletics must be increased to generate more spectator interest. While some of his proposals could certainly lead in this direction, others provide enough stimulus to think about different alternatives. Some of his ideas, however, simply make the reader realize that the present situation is still better than all conceivable alternatives.

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