Toward a new (evolutionary) economics of sports

Jason Potts

School of Economics, Finance & Marketing, RMIT University, Australia, jason.potts@rmit.edu.au

Abstract. The standard approach to sports economics is concerned with efficient resource allocation and valuation in mature (professional, team) sports modeled as a competitive (entertainment) industry. We propose a new research program for sports economics based on questions about (evolutionary) sports dynamics – on the trajectory by which a sport originates, grows, and variously stabilizes or collapses. We propose a new classification of rules-first sports and technology-first sports that suggests different model of how sports develop. We then outline some key aspects an evolutionary view of sports economics research and, separately, an institutional view of sports economic research.

1 Sporting questions & classifications

The standard approach to sports economics is that of an applied microeconomic analysis of optimal resource allocation, and factor valuation, in an imperfectly competitive (but mature) industry. An appropriate definition of much of modern sports economics as the study of

> 'an industry composed of firms that are called "teams" [in which] the product of the industry is a form of entertainment [that] is produced by the team sports industry through the medium of games.' (Rottenberg, 2000: 11).

Basic questions[1] concern the optimal allocation of a society's resources to this particular industry, and within that concern the characteristic functioning of the various markets and organization that composes it, including the marginal valuation of the factor contributions. Sport is an industry that produces entertainment using scarce resources. These resources include players, who have alternate occupations, and publically financed capital goods, such as stadiums. The framework of economic analysis used here is the standard microeconomics of production and consumption in competitive markets.

[1] A review of topics in sports economics includes: *Prices and Markets*: demand for sports tickets, valuation of players & teams, broadcasting rights; *Industrial organization*: franchises and profit maximization; monopoly and cartels; competitive balance; *Public finance*: ownership; benefits of a franchise to a city; financing facilities; *Labour economics*: monopsony; unions and agents; owners versus managers, discrimination; *Not for profit* sports: amateurism; sport in schools/college.

However, we propose a new conceptual definition of sport in order to ask a somewhat different set of questions about the economics of sport. We do this by drawing upon different branches of economic analysis than are usually employed – specifically *institutional economics* – as the study of self-organising rule systems – and the *evolutionary economics* of entrepreneurship and innovation – as the study of technological change. The relevance of these two approaches is that they cover the basic new definition of sport that we propose in terms of both rules and technology. Our concern is not so much with the efficient use of scarce resources for sport, or with the industrial organization of (professional, team) sports, but rather with the general economic question of *sports dynamics* – of how sports evolve, why sports succeed and fail, of the growth and structural dynamics of different sports as part of the same class of questions asked by evolutionary economists about industrial dynamics and technological change. The standard approach to sports economics concerns the most efficient organization of a sport, given existing conditions. But we're interested in how the sport changes, given new opportunities. We are interested in the origin of new sports (as analogous to the origin of new industries or technologies) and the process of origination, adoption and diffusion that characterizes the market evolution of a new sport into a mature sport (Shah 2000, 2005, 2006; Buenstorf 2003, Luthje 2004) as analogous to the S-shaped innovation diffusion trajectory in industrial dynamics (*cf*. Rogers 1996), including the ways in which that evolutionary growth process can fail.

2 Defining sport

The definition of a sport usually follows along the lines of a competitive physical activity, undertaken to maintain or improve physical ability, or for entertainment, both to participants and spectators. Sports economics almost entirely hews to the latter end of this definition, defining a sport as part of the entertainment industries. Still, sports economics gets by without much of a definition of sports beyond that of the substitution of a resource-using entertainment industry in which firms are called teams, consumers are called fans, and restricted-entry markets are called leagues.[2] But the boundaries of this set can be fuzzy, which is why definitions are useful. A number of physical, competitive activities are excluded from being sports, along with a number of difficult, competitive activities because they fail at one of these criteria:

> 'Every single sport on earth shares three fundamental characteristics: people compete at it, computers can't do it, and aesthetics don't count.'[3]

Cheerleading and figure-skating are performances not sports (aesthetics count). Chess is a game not a sport (computers can do it). But wife-carrying is a sport.[4] Within

[2] As JEL classification L83 – sports, gambling, tourism – within L8 – industry studies.
[3] http://www.theatlantic.com/entertainment/archive/2010/08/why-cheerleading-isnt-a-sport-but-croquet-is/60949/
[4] http://en.wikipedia.org/wiki/Wife-carrying

sports there are numerous possible taxonomic classifications.[5] The SportAccord Council – an international federation of sporting governing bodies – has developed an exclusionary definition to help determine whether an applicant qualifies as an international sports federation.

1. The sport proposed should include an element of competition.
2. The sport should not rely on any element of luck specifically integrated into the sport.
3. The sport should not pose undue risk to the health and safety of participants.
4. The sport should not rely on equipment that is provided by a single supplier.

Here we see competition, skill, absence of animal cruelty, and concern with monopoly in equipment (but seemingly not in terms of sports organizations, which are invariably cartels).

2.1 Sports = rules + technology

We propose a new definition of sport that turns on two aspects – rules and technology (or equipment, or complementary sporting goods and capital that is technology embodied, or a 'general purpose sports technology'). The significance of rules for sports is that without rules it is not sport; it is play. The modern significance of rules relates to controlling and governing competition and technology; but the original significance of rules relates to the ritualistic aspects of sports.

> 'In the beginning, sport was a religious cult and a preparation for life. Its roots were in man's desire to gain victory over foes seen and unseen, to influence the forces of nature, and to promote fertility among crops and cattle.' (Brasch, 1971: 1)

Fertility rituals are central to relatively few sports these days, but the focus on quasi-ritualistic endeavour over largely arbitrary but nevertheless precise goals remains the essence of sports (and of games in general). We therefore propose two basic classes of sport:

(1) *Rules first, then technology* – in which the rules (over some arbitrary activity) come first, and then new technologies are added to develop the sport;

(2) *Technology first, then rules* – in which a new technology creates some arbitrary possibility, and then rules are added to make it into a competitive sport.

We thus distinguish between sports in which rules move first, and sports in which technology moves first.

2.2 Rules-first sports

[5] Individual and team sports; amateur and professional sports; competitive and non-competitive sports; spectator sports and non-spectator sports; incursion and non-incursion sports; equipment based and non-equipment based sports.

Examples of rules-first sports are largely those that have an origin in some manner of ritualistic or somewhat arbitrary activity that then became successively codified. Most *incursion sports*, as modeled on battle – where one team attempts to achieve an arbitrary goal (such as moving an arbitrary object, e.g. a ball, to an arbitrary point, e.g. into a fixed location net) in the territory of another team, who try to defend – are examples of rules-first sports, the rules being what the particular goal is and the constraints upon how it is to be achieved. These rules relate to the size of the field of play, the number of players, the permissible moves, the duration of the play, consequences for illegal play, the scoring system, and so on.

Most physical ability or marshal sports relating to artificial or stylized versions of natural activities that would be valued in some state of the world – running, jumping, throwing, fighting – are also rules-first sports, in that they define a basic standardised form of competition, say over a fixed distance, or for a fixed time, or with a given weighted object, and so on. The ancient Olympic games are the acme of this, as associated with the amateur ideals of a sport that is defined by timeless traditions and minimal ancillary equipment or technologies.

Rules-first sports develop as new technologies are added to the sport, but under the condition of conforming to the extant rules. Technologies may thus improve game-play by adding safety features (helmets, pads) or the speed of play, by making gear lighter or stronger, but usually within tightly prescribed limits (e.g. the size of a bat in baseball or cricket). Technologies can be added to improve detection of rule violation (line-cameras in tennis), spectator immersion (radar guns in games in which interest turns on the speed or distance travelled of a ball at crucial moments in play, such as cricket or jai alai), or the reach of spectators (satellite broadcasting of games).

But it is still the same underlying game, which may retain a kind of pure unadulterated form (whether or not this exists in reality, or only in romantic nostalgia, or perhaps as played by children, or as a stripped-down street or beach version). The point is that the sport develops as technologies add to the characteristics of the game (e.g. the speed at which it is played, the scale at which it can be observed) but do not change the game. The new technology fits to the given rules.

2.3 Technology-first sports

Technology-first sports begin with a new capability or material – which is invariably a piece of equipment or 'kit', such as the horse, automobile, surfboard, rifle, skis, crampons and ropes, hang-glider, bicycle – that makes it possible to undertake a new activity – to do a new thing. This 'new thing' may have preexisting functional utilitarian purposes (such as transport, or hunting) or it may just be an unexplored or multipurpose potential arising from the new technology – such as plastics or carbon fibres, changing what can be done for aero-sports or on-water-sports.

A sport is created when this new technology is removed from that utilitarian purpose and rules are constructed for its competitive application to an arbitrary but

well-defined purpose. The clearest example of a technology-first sport is motor sport, where first comes the technological capability, and then rules are added to organize (i.e. to bring competitive order to) the technology into a sport. The purpose of the rules is to organize competition about a particular given technology (or suite of technologies).

These rules may spontaneously self-organise, and then be codified, or they may be deliberately constructed by an entrepreneurial governing-body, and then selectively adopted by others. The point is that the sport develops by adding governance to bring order to the exploration of possibilities of a technology. A rule-first sport is the opposite, where it starts with an order of rules, and the purpose of new technology is to explore the potential within those rules. (In a technology-first sport it starts with a new technology, and the purpose of the rules is to explore the potential within that technology.)

Technology-first sports tend to be younger and more recent, indeed most new sports are technology-first sports. A paradigmatic example is windsurfing (Thomas and Potts 2014), along with mountain-biking (Buenstorf 2003), snowboarding and skateboarding (Shah 2000, 2006). These sports began when amateur enthusiasts who had some engineering capabilities experimentally built their own equipment and tried to do new things, usually in a community context (Franke and Shah 2003) but with entrepreneurial consequences (Shah and Tripsas 2007).

The development of technology-first sports tend to have two phases: first, the formation of a community of users (early adopters) who pool and share information and knowledge about technological developments (and innovation commons) (von Hippel 2000); second, the development of rules for the governance of the new sport, often developing from the same group of users. This early adopter community is often the basis for many of the new firms that emerge to commercialise the development of the sport. They have an obvious stake in the provision of order to the new market, including standards and rules.

Of course almost no sport conforms purely to this taxonomy, with rule changes to rules-first sports (e.g. changing the points in a try from 4 to 5 in Rugby Union in 1992), and new technologies coming into technology-first sports that radically change the sport, in effect creating a new sport. In an important sense many exemplars of rules-first sports (football, or athletic throwing sports) had a technology at the point of origin (a ball, a javelin). These represent different characteristic modes by which a sport comes into existence and develops, with differing roles and opportunities for entrepreneurs in respect of technology and governance.

However, it is a plausible hypothesis that rules-first sports and technology-first sports display systematic differences that make them prone to characteristic dynamics and pathologies. Rules-first sports will be prone to *rent-seeking* (Krueger 1973) and *capture* (in the sense of Stigler's (1968) model of regulatory capture) by insiders. Technology-first sports will be prone to *overshooting* and collapse due to capture by elite performers and the rents associated with innovation-competition and subsequent

neglect of entry-level markets. Technology-first sports will also experience significant variety in the early stages of the industry through exploration that will be prone to *shake-outs* (Klepper and Graddy 1990; Klepper and Simons 2005) when rules are still forming and there are still high levels of uncertainty about the scale and scope of the sport as well as its technological possibilities. Institutional economics is the natural analytic basis for the study of rule formation in new sports and Schumpeterian or evolutionary economics is the natural analytic basis for the study of technological dynamics in sports driven by entrepreneurship and innovation.

3 A research program for New Sports Economics

3.1 Evolutionary models of the sports economy

A new sports economics will seek to apply evolutionary economics to the study of the sports economy. At the core of the evolutionary approach are innovation trajectories that are entrepreneurially created, growth through a process of adoption-diffusion, and that carve out new industries as a process of 'creative destruction'. In the case of sports, this refers to the population of firms for each sport, and also the population of fans for each sport. The evolutionary process can be modeled using the 'micro meso macro' framework (Dopfer et al 2004), and we can suppose that this can be adapted to the study of an evolutionary approach to the sports economy – in which each new sport is a meso trajectory.

3.2 On the origin of new sports

The generic form of the evolutionary economic approach is that the origin of a new sport – like the origin of a new market, or industry – is a consequence of entrepreneurial action: a sports entrepreneur. Stephen Hardy (1986) suggests that historians should see sports in terms of entrepreneurial founders and of the development of the sport as akin to an Schumpeterian technological trajectory (Chacar and Hesterly 2004, Fuller *et al* 2007, Terjesen 2008).

We can observe entrepreneurship in in a rules-first sense – Naismith inventing the rules of basketball *de novo* (and then coaching the men's basketball program at the University of Kansas), and Camp inventing the new game of American football by a series of adaptations and changes to the rules of rugby football. But we can also observe entrepreneurship in the technology-first sense, as when the sport of mountain-biking, with the technology of 'clunkers', developed (Buenstorf 2003), or windsurfing (Shah 2000).

Goff *et al* (2002) argue that racial integration of baseball teams was an act of entrepreneurial innovation in a competitive market that had the spillover consequence of lowering discrimination in sports. Coyne *et al* (2007: 230) explain 'simply put, the entrepreneur's decision to integrate must be viewed in the context of his overall desire

to maximize profits.' Wright and Zammuto (2013) show how entrepreneurship in sports relates strongly to institutional roles within sports organization. Ratten (2011) argues that the entrepreneurial perspective can be integrated into the theory of sports management.

3.3 A sports trajectory

At the core of evolutionary economics is the notion of the *technological trajectory*, onto which are mapped concepts such as an industry life-cycle (Klepper and Graddy 1990), and an innovation diffusion curve (Rogers 2003). A technological trajectory is a three-phase 'meso' process. This evolutionary framework can be applied to the study of a new sport as a novel generic rule in which the analytic components of the micro-meso-macro framework (Doper *et al* 2004) are used to unpack the historical entrepreneur-driven process of the origination, adoption and diffusion, and retention of a new sport through a 'sports trajectory'. This can also be used to develop analysis of particular technologies through a sport (Galenson 1993).

New sports evolve from existing sports through a branching process. Consider motorsports. From the initial development of a technology – chassis-mounted engines – and the development of industries and markets for the manufacture and sale of cars, bikes, trucks, etc, we can also observe a corresponding development of organized sports associated with this technology and industries (such as Formulae 1, Formulae 2, etc). These are more than simply clubs, but governing bodies that create and enforce rules that enable the organization of championship events in a motorsport class. What we observe is the development and differential replication and selection (the evolution) of both increasingly popular and increasingly specialized sporting niches by governance bodies that organize sporting competition about particular technological capabilities.

A further implication of a trajectory focus on sports industries is the application of models of diversity and shakeout in which the early periods of an evolutionary trajectory (into an open niche) are characterized by an explosion of variety, followed by a long period of subsequent winnowing on that variety (selection) to a smaller set of dominant species or technologies. Steve Klepper and colleagues (Klepper and Graddy 1990, Klepper and Simons 1997, 2005) have studied this industrial process in car and tyre manufacturing in the US and noted the same dynamic pattern: hundreds of small diverse firms at the beginning of the industry (phase 1), followed by a consolidation to a few dominant designs through a process they call 'shake-out' (phase 2), resulting in an oligopolistic mature industry (phase 3).

A working hypothesis is that the evolution of a sport follows a similar pattern. We would expect this to apply differently to technology-first sports compared to rules-first sports in respect of the dimensions over which the initial explosion of variety and diversity applied to, and the focal point of the subsequent shake-out. The period of variety generation can be understood as an exploration phase in several

dimensions. An obvious one is *design* dimensions of the sports technology – shapes of bicycle frames, say, or rigging set-ups on sailing equipment, or the 'formula' for motorsports. Sports technology, like any technology, is largely experimentally developed, and the capabilities opened by any new technological innovation (in engine power, or materials) will lead to a period of exploration followed by subsequent differential selection (see Desbordes 2001 for a study of innovation in skis). Other dimensions may be in relation to the operational and governance rules, of the sport, such as tournament structure, business models, scale and frequency, and other factors. Again, the initial explosion of variety may reflect fundamental uncertainty about participant supply, sponsor requirements, spectator demand, media economics, and so on, all of which may only be entrepreneurial conjectures and market tests. We would thus expect to observe a phase of learning and consolidation to follow the period of exploration in any sport. Furthermore, we would expect this period to correspond with the main growth phase of a sport, and also with the creation of capital and wealth associated with the owners of that model and its key complementary assets (Teece 1986). Economic models of excess entry and winner-take-all effects would be expected to apply through the trajectory of a new sport.

A further phenomenon we may expect in the trajectory of any technology-first sport is overshooting (Earl and Potts 2013). Thomas (2014) explains how overshooting unfolds in the sport of windsurfing in consequence of technological (rather than price) competition between firms driving a wedge between entry level and elite user equipment. Overshooting can also be observed in many board sports and on-water sports (paddle-boarding, canoeing, kayaking), but is notably absent in some other sports such as cycling. Overshooting in motorsports, which tend to have strong governance, usually results in the formation of new 'formulas' for competition, rather than the collapse of the sport. Overshooting is not an oversight by the producers, but a dynamic consequence of technological competition with weak governance. But the result is the risk of destroying the sport in the long run because of the harm to entry-level users. Unconstrained technological competition can destroy a sport through an overshooting trajectory. But not all sports experience this dynamic pathology – indeed, it is characteristic only of technology-first sports and furthermore ones with governance that is too weak to effectively constrain competitive technological development. Control of competitive technological overshooting is thus one of the important functions of the development of sports governance and rules in technology-first sports.

User innovation is a further aspect of technological change in sports. In the standard model of technological competition, firms invest in research and consumers choose over the rival offerings. This model of the passive consumer began to be challenged by models of 'open innovation' (Chesbrough 2003) and 'user innovation' (von Hippel 1986). It has been widely observed that the origination and technological development of new sports seems to disproportionately lie with the role of users and participants, particularly of technology-first sports (Buenstorf 2003, Lüthje 2004, Lüthje et al 2005; Shah 2000, 2005, 2006; Frenke and Shah 2003, Boyce and Bischak

2010). (Counterexamples are rules-first sports, such as cricket, which developed new game forms, such as the one-day match or the new 20-20 match, as a governing body and corporate led new rule form that was then imposed on the game.) The development of a new sporting technology is almost entirely an experimental endeavor that benefits from pooling and sharing of such knowledge, much of which is tacit, is difficult to acquire or maintain property rights over, and is of limited external value. Reputational mechanisms (as in science, Kealey and Ricketts 2014) can function as economic incentives to investment and disclosure of innovations.

4 Institutional models of sports economics

While evolutionary economics maps to technology-dynamics of sports, institutional economics maps to the study of the *dynamics of rules and governance* in sports. Sport has a rich institutional context in relation to self-governance that has not been widely developed in economics. Models from new institutional economics, constitutional and public choice economics, and evolutionary game theory can be usefully developed toward this end.

The standard social welfare-based economic argument for public or government involvement in an economic activity turns on the presence of substantial externalities, leading to market failure. Such arguments are used in reference to public funding of sporting infrastructure, as well as the case for public finance to underwrite the hosting of large sporting events because of the difficulty in internalizing benefits such as city reputation, tourism, employment, housing prices, and public health (Hone and Silvers 2006). Sporting infrastructure produces concentrated private benefits (Wilson and Pomfrey 2009). Public choice economics explains why such sporting infrastructure is nevertheless widely publically funded in consequence of such sporting groups representing well-organized Olsonian coalitions. But there is another class of sporting organizations viewed more from the perspective of clubs (Buchanan 1965) engaged in voluntary actions that contribute to a sporting club as part of a local society (Allison 1998). These private amateur organizations usually run on a mix of voluntary contributions – to coaching, organization, office-bearing, etc – and membership fees. Historically such clubs were politically agnostic, seeking nothing to do with the state, but by the late 20th century many had ben recaptured by the state through various grants, special tax treatment or subsidies. Part of this reflected the state's interest in sporting clubs working as instruments of social capital formation in growing multicultural society (idealized in Australian surf-lifesaving clubs for example) – although this often worked against that aim by reinforcing ethnic tribalism (as in Australian soccer clubs in the 1950s-80s, for instance). On a broader scale, sociologists have long pointed to the role of regional and national sports clubs in promoting the national building project through identity with the nation state and thus weakening ethnic and tribal identities (Houlihan 1997b).

The standard approach to sports economics is concerned with the allocation of resources within a sport, or to sports overall compared to other economic uses (Rottenberg 2000). Further research has sought to inquire into issues of sports governance, particularly in the context of commercialized clubs (Gammelsaeter 2010), optimal organization of professional teams and the efficient economic organization of sports leagues, and of the evolution of organizational models under competitive selection (Andreff and Staudohar 2000). But we can also model a sport as an institutional economic order: starting with (1) socially embedded institutions – the culture of the sport; (2) institutional environment ('rules of the game' of the sports economy; (3) governance – the organization of production of the sport; and (4) the sports business. Such an institutional analysis of a sport can plausibly provide a foundation for what we might call '*comparative sports economics*' as an approach that draws upon the work of the new comparative economics (Djankov *et al* 2003, Boettke *et al* 2005) to study the institutional conditions of the comparative success (or efficient institutional outcomes) of different sports as a function of their institutions.

But sporting clubs and organisations are not only involved in coordinating resources for sports but also in the creation, implementation and enforcement of rules for a sport, which is to say with the entrepreneurial creation of rules and with ongoing governance. Here a sport is closer to a commons (Ostrom 1990) constituted by not only the jointly-held physical resources (sports capital goods and equipment) but also the organizational rules and institutions of governance that create and coordinate access to those resources. A sports club in this sense is made of both capital (pooled assets) and institutions (to organize the sport, and its production of competitions). In the simplest case, a sports club is a governance mechanism to coordinate joint ownership of and access to a *common pool resource*, such as a swimming pool or a tennis court. Further governance possibilities extend to the production of sporting *events* (such as a hiking club) or sporting *contests* within that club (e.g. a sailing or tennis club), or between clubs (as in football club, requiring the existence of other clubs). These tend to be the mode of operation in rules-first sports. But a sports club can also function in a technology-first sport to furnish rules and governance to bring order to an otherwise disorganized state of technological experimentation and interaction, by creating rules for a sport (such as the particular formula in motor sports - e.g. Formula One, Formula Two, NASCAR, etc). Or a sports club can bring order to unstructured competition to create a higher-level institutional system (such as the National Basketball Association (NBA) or the NFL in the US, or the creation of a major and minor league system in baseball). Sports organisations are in this sense instances of private orderings (Leeson 2014). These private orderings furnish the outputs of the sports economy as competition and entertainment, but they also facilitate the higher order goals of coordinating technological sporting development and in a broader sense the ongoing discovery of what is actually possible in a particular sporting domain.

5 New cultural economics of the sports economy

We can apply the new cultural economics (Potts 2011, Hartley and Potts 2014) to the study of the sports economy by starting with the well-known observation that the output of professional sports are games and matches that are *content* for the media entertainment industry. It has long been true that the primary revenue sources for most professional sports are through media, particularly broadcast rights, and merchandising rather than through club memberships and ticket sales to sporting events (Rosner and Shropshire 2004). The working assumption in sports economics is that the unit of analysis is the game or match, to which production cost, media rights, viewer ratings, and a measure of competitive balance or probability of winning, can be all be calculated. The standard model of the sports-fan in economics assumes that the utility of watching a match is proportional to the 'uncertainty of outcome'. But a different working assumption can be crafted about the idea that sport is actually a species of *epic story-telling*.

This view of sport as an epic story connects the production of sporting content with media economics, as the production of an information good (de Vany 2003), and the economics of identity (Akerlof and Kranton 2000). In this view the individual match or game, or even season is not the unit of analysis, but rather the entire sport is, centred upon a particular team – which a fan identifies. This identification is a kind of untradeable ownership, in that the fan experiences as positive and negative utility the wins and losses of the team and the team's journey as an epic story. The relevant criteria to evaluate the quality of a sport are not just as competitive balance to maintain uncertainty of outcome, but with the qualities of a good story.

Booker (2004) outlined the seven basic plots in all stories, all of which can be found in sports (overcoming the monster; rages to riches; the quest; voyage and return; comedy; tragedy; rebirth). The classic story-form archetypes that we instinctively recognize are usually not far below the surface in most sporting content – the hero; the villain; the trickster; the shapeshifter, and so forth. Boyd (2008) examines the evolutionary origin of stories, finding universal patterns of structure and narrative, many of which play out in the epic realm of sports as a function of the challenges and knowledge requirement in the human ancestral environment. These aspects speak to not only the universality of sports across human culture and its origins deep in history (Brasch 1971), but to a more specific point, that while there is a great variety of sports and an endless parade of new sports, there are nevertheless fundamental similarities in sporting stories over a long arc – the eventual success of the scrappy underdog; the fall of the unworthy champions; the unexpected triumph or loss (comedy and tragedy); and the great domain of magical thinking – that fandom and support affects the outcome.

The sports franchise is not only an epic story; it is also a tribe-making mechanism – bonding many individuals into a well-defined group with clear boundaries and adversaries (what Hartley and Potts 2014 call a 'deme'). These types of stable groups – a sports team can last decades, even centuries – as an epic story of

origins and ancestors and ways of behaving toward insiders and against outsiders suggests a correlate with the work on in-group trust and social capital on economic outcomes (Knack and Keefer 1997). In arts and cultural domains, a story has an author – the story is written before the audience can experience it. But sports stories are different: they are written as played, although you know the characters (players) in advance, you don't know what they will do – they may have only imprecise plans themselves. (Sports commentators and sports journalists retell the story during play and after it has played out – in roles closer to literary critics, helping consumers to construct their experiences and organize their understanding and memories of the unfolding story arc.) The quality of the story form thus lies in the rules of the game and the organization and production values that go into its performance. This is why the quality of the sports institutions and rule complexity is central to the success of a sport as an epic story.

6 New Sports Policy

Government involvement in sports is relatively recent. Prior to the mid 20th century few sports were professional, sports infrastructure was not seen as a competitive public investment, and sports and leisure was not an 'industry' (Houlihan 1997: ch 3). But that has changed significantly over a number of fronts. The earliest movement was legislative outlawing of bloodsports, and associated gambling (although leaving elite sports such as foxhunting unrestricted), followed by the popular government involvement in creation of national parks and reserves that were open to outdoor pursuits. Governments also recognized the nation-building, community integration and public health benefits associated with sports, such that preventative expenditure on health and fitness is recognized to offset against medical costs of chronic diseases of poor fitness. Governments can direct taxpayer funding to the support of favoured sports – usually through elite training in sports of special significance to a nation. Government involvement extends to the use of sports as a diplomatic mechanism – for example in building links with allies, or deliberately withholding them through boycotts. Sports policy also extended to its role in public finance for city and regional development, particularly of redevelopment as part of a culture, leisure and tourism connection, through connections to keystone projects such as stadiums and bidding for global sporting franchises or games (Siegfried and Zimbalist 2000, 2006).

Many OECD nations now have a sports minister – whether as a dedicated minister of a department of sports (as in Australia since 2007), or as combined with any or several portfolios including arts, culture, leisure, tourism, health, youth affairs, industry, heritage and community development. Sports ministers provide a contact point for special interest lobbying from those who seek direct public funding or log-rolling opportunities (Olson 1965). The case for industry policy-type applications is not usually focused on a particular professional sport per se, but as a positive externality of spillover to industries that are targeted for government support, such as tourism. Particular support has also been extended when a sport intersects with a

frontier of technological development, such as boatbuilding (particularly yachting), where the sports policy is developed as a form of R&D subsidy for applications of new materials or high-technology manufacturing capabilities.

In most instances, government involvement in sport seeks to utilize sport for some further end – whether industrial development, regional development, healthcare offsets, political consolidation, international branding, reputation and soft-power – or to see sport as another realm of opportunity for the sale of government favours to organized coalitions who seek particular results (e.g. zoning to create parks, public funding for infrastructure with private spillover benefits, subsidized training, etc).

Yet while sports spending can be controlled by government mechanisms, the rules of sports are not written into legislation but are self-regulating through sports governing bodies. Often these will then seek legitimacy and stability through recognition by an elite sports federation (e.g. the International Olympic Committee, or the International Federation of Association Football (FIFA)). Instead, the main ways in which federal legislation affects sports are through: contract law – affecting labour markets for professional players and licensing; intellectual property law – affecting broadcast sales and merchandising; and company law and antitrust law – affecting regulation of sports leagues.

What we propose here as new sports economics adds a further dimension to law and legislation in sports by considering the way in which extant laws affect the pattern and distribution of the development of new sports, and the course of development of existing sports. The predominant legislative effect here is in relation to personal and corporate liability, such as the tort of negligence, and its effect on the costs of insurance and the distribution of risk in the undertaking of a sport. American football, for example, is currently facing mounting legal challenges and large expected costs from sustained head-injuries due to on-field collisions, which are within the rules of the game. This may limit the growth of a sport by raising the costs of participation, or by making it unprofitable at some margin to supply the sporting goods or organization. Jousting, for example, is a sport that was once popular, but is unlikely to be profitable under any modern law.

But differential treatment of such torts, including the socialization of risk, can lead to different margins in the development of new sports – a phenomena we can call *the geography of sports innovation*. For example, New Zealand has given rise to a disproportionate number of new sports, largely in the outdoor, extreme and adventure space. Partially this may reflect factors specific to New Zealanders and their outdoor lifestyle, but it also reflects the institutional peculiarities of New Zealand risk-pooling, with its relatively strong presumption of individual risk assessment, light-touch regulation, and little ability to sue for personal injury damages because of a system of a tax-payer funded accident compensation schedule, rather than provider liability. This lowers the cost of experimental development of new sports, which leads to an increased supply. Examples include bungee jumping, black-water rafting, heli-biking, and zorbing. This can be economically modeled in which sports are viewed through

the lens of entrepreneurial discovery of comparative advantage due to local resources and capabilities (Haussmann and Rodrik 2003).

7 Conclusions

We have proposed a 'new economics of sport' as a shift in the types of questions that sports economics seeks to answer. These are away from 'sports statics' – as a branch of applied economics of industrial organization and optimal allocation of sports resources (Rottenberg 2000) – and toward concern with the economics of 'sports dynamics'. The prime questions are less with the optimal organization of existing sports, and more toward understanding the origin of new sports and the evolutionary lifecycles of all sports.

This combined focus on sports technology (and its evolution) and sports rules (and their governance) is built around a proposed analytic framework that is a combination of evolutionary economics and new institutional economics. The analytic methods and approaches developed in these fields can be expected to transfer to a new sports economics. These aspects of technological change and sports, and the governance of sports as a collective action problem can be examined separately but they are both required for the study of sports dynamics as the co-evolutionary interaction of technological change and rules. This suggests a particular shape to the research program of new sports economics as set out in table 1 below.

	Old sports economics	New sports economics
Economic problem	Allocation of resources	Coordination & change
Theory-base	Neoclassical welfare economics, Applied micro-economics, Statistics Game theory Industrial organization Public choice	Growth theory Meso-economics Schumpeterian economics New institutional economics Evolutionary game theory Public choice & political economy
Analytic focus	Efficient sports organization Valuation in sporting markets Labour markets	Sports entrepreneurship Sports innovation Market creation
Which sports?	Individual mature (team-based, professional) sports	New sports Evolution of sports economy
Seeking to explain	Rational, possibly surprising, outcomes	Differential sports growth
Policy	Anti-trust, subsidy	Innovation and regulation

Sports economists usually defend their interest in this domain not by pointing to the significance of the sports economy in terms of total value added or jobs, but rather to the laboratory it creates for the study of the competitive economy (Rottenberg 1956, Blair 2011). Economists study sports because sports are a hothouse of interesting economic problems that present in very clean, almost stylized ways. It has long been appreciated that this is true in relation to competitive organization, valuation and many aspects of the economics of contracts in sports and the allocation of resources within sports and to sports. The purpose of this paper has been to seek to extend that claim into the ambit of the study of entrepreneurship, innovation and technological and institutional change. Sports are not major sites of entrepreneurship and innovation in the economy. But they do present many very clean cases where the interaction of technological change and rules of governance can be clearly identified and decomposed. This sets out a research program of new sports economics in terms of sports entrepreneurship, sports innovation and the evolution of a sports economy, and sports self-governance and comparative sports institutions. These are the theoretical and analytic reasons for a new sports economics.

But there is also a deeper sense in which sports are just interesting (and not just economically interesting). Sports are part of what makes us human, and part of human civilization. They are a deep part of us and our societies, and therefore our economies. But they do change. New sports can emerge, and old sports can lose popularity – like technologies, they never quite go extinct. New sports economics will endeavour to assemble and develop empirical accounts of the emergence and dynamics of sports, to in effect map the 'natural history of sports. It will also seek to build theories that will describe and explain the structures and processes that are observed. The objective is to arrive at a better understanding of the evolutionary dynamics and structural coordination features of sports. Like the creative arts – which also can be framed in purely entertainment (consumer utility) perspective as a species of production within the broad entertainment industries – we can also view sport from the perspective of an instrument of human discovery. The utilitarian lens of sports as contributing to consumer health, fitness, entertainment and so on, or as just another job or business, hides the importance of sport as, at root, an expression of play. Play is something that all higher mammals do as a mode of learning and discovery of the world about them. So it is with sports. Sports, as play, even professional play, is a way of finding out what we can do, with our bodies, and with our technologies. To do this, we need rules, to bring order to the play: that is the dynamic meaning of sports. A new sports economics is a way to study that particular aspect of discovery.

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