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The Object-Oriented Politics of Stadium Sustainability: A Case Study of SC Freiburg

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Abstract: Sport stadia are political objects that carry an environmental cost. The purpose of this research is to add to previous literature by theorizing the political process of stadium construction in a way that accounts for how environmental issues are introduced into the political process and, therefore, offers a more accurate lens through which to interpret how sustainable stadia are constructed. We conducted a case study of SC Freiburg’s carbon-neutral stadium construction process to theorize the object-oriented politics of sport facility construction. SC Freiburg is a German football club, playing in the Bundesliga. To examine the case, we employed a key informant interview and document analysis using Nexis Uni searches, local newspaper articles, official city documents, and social media websites. The case study of SC Freiburg’s carbon neutral stadium construction process showed that environmental concerns were included through a political process that incorporated the interests of a diverse public of human and nonhuman actors (while excluding some actors whose interests could not be reconciled) to produce a sustainable matter of fact. Additionally, we propose a pragmatic definition of stadium sustainability and suggest that environmental activists should make sure that both human and nonhuman actors with sustainability concerns are included in the stadium’s material public.

Keywords: material public; Freiburg; Bundesliga; football; stadium

1. Introduction

Stadia have long been seen as political. For example, researchers have shown how politicians and owners in North America often circumvent democratic processes to spend public money on stadia despite economists demonstrating that they may be a bad investment [1–3], and despite social concerns (e.g., residential evictions) [4]. Scholars have noted that stadia also have an ecological cost [5]. It is important to consider how environmental impacts are included in the political process of stadium approval, financing, design, and construction, for several reasons. First, given the record of stadium financing around the world, it is likely that environmental concerns have not always been considered extensively. Owners and politicians may even abuse green building standards by using environmentalism as an excuse to demolish and rebuild “environmentally-friendly” stadia for their

own benefit [6]. To work in accordance with the Sustainable Development Goals stated by the United Nations [7], it is crucial that the process of stadia construction include ecological considerations.

Second, considering environmental sustainability of sport stadia is important, given the potentially large environmental cost of constructing and operating such a facility. For example, Grant Jr. [8] noted the large impact that sport can have on the utilization of raw materials, air pollution, local water supplies, and waste disposal. Bunds, Casper, Frey, and Barrett [9] found high levels of PM_{2.5} (i.e., a certain type of particulate matter; an indicator of air pollution) at university American football games, and Lefebvre [10] reported that operating one Dallas Cowboys game (with an average attendance of 91,179 spectators at time of writing in 2019 [11]) requires more electricity than Liberia (with its estimated 4,937,374 residents in mid-year 2019 [12]) uses in one day. To avoid these high environmental costs, more and more sport organizations are beginning to prioritize, adopt, and leverage sustainable practices [13,14].

Achieving environmentally-sustainable outcomes in sport depends on how scholars and organizations theorize the political process. For example, Kellison and Mondello [2] developed the concept of civic paternalism to explain why political leaders ignore public votes or circumvent referenda when allocating subsidies to professional sport. While civic paternalism likely applies to many environmental issues, it is an incomplete theory of environmental politics, because it only allows two ways for environmental concerns to enter the political process: i.e., by way of the citizens (who are sometimes ignored) or through the civic paternalists. In contrast, recent scholarship has emphasized how environmental objects and events are able to make a difference in, and occasionally impose themselves on, the political process, with or without the help of human actors [15–17]. Indeed, growing public concern about the effects of climate change is partly due to the climate increasingly making itself felt via droughts, hurricanes, floods, heat waves, and diminishing lake levels [18–20].

Our aim is to theorize the political process of stadium construction in a way that accounts for interdependent natural and political ecologies, and that offers a lens through which to interpret stadium sustainability. To achieve this goal, we draw on recent work in new materialist and object-oriented approaches to politics, which consider the role of nonhuman actors in the political process [15,21–24]. We use this theory to illuminate a case study of SC Freiburg's process of constructing a carbon neutral stadium. SC Freiburg's success at building an environmentally-sustainable stadium serves as an important case to develop new concepts for understanding environmental initiatives in sport [25]. It also serves as a useful counterexample to the political processes often used in North America and elsewhere. After applying our theory to SC Freiburg, we offer a pragmatic definition of stadia sustainability, which can be used by scholars, managers, and activists to understand and intervene in the construction of stadia and other sport facilities.

2. Theoretical Framework

2.1. Material Public

In *The Public and Its Problems*, Dewey [26] defined *the public* as “all those who are affected by the indirect consequences of transactions, to such an extent that it is deemed necessary to have those consequences systematically cared for” (p. 15,16). Whereas other definitions of the public distinguish between private and public life, Dewey defines the public as a group produced by an issue or effect. The public is formed around a disruption rather than through routines, procedures, or shared membership to a class, geography, or an idea. Thus, publics can be formed and dissolved. It is unnecessary to always belong to a public or to even belong to a public at all. For example, when a stadium subsidy is proposed for a city, it is common to see a heterogenous group of residents band together, for a short time, to resist or debate the subsidy.

Marres [15] extended Dewey's perspective of the public by linking it to recent work on heterogenous assemblages. Heterogenous assemblages are networks of human and nonhuman actors, whereby agency

is distributed among all actors, not just humans. Scholars such as Bruno Latour [27], Michel Callon [28], Jane Bennett [29], and Graham Harman [30] have explored the role of nonhuman entities in political theory. This work counters the traditional role of nonhumans as “topics” of political debate and “means” of political action by showing how nonhumans are capable of making a difference in the organization of politics.

An example from the context of sport and the environment is McLeod, Pu, and Newman’s [16] study of the Beijing 2008 Olympics. McLeod and colleagues [16] showed how high particulate matter levels, bad air quality, and concerns about the lack of what the residents called “blue skies” over the city became important constituents during the Olympic Games, as a range of heterogenous (human, non-human, scientific, discursive) actors were enrolled in a debate between human rights activists, the International Olympic Committee, member governments, scholars, and citizens about the Chinese Communist Party’s right to govern. Marres [15] explains how heterogenous assemblages, like the one in Beijing 2008, are analogous to Dewey’s public. Thus, a *material public*, to use Marres’ [15] phrase, is a group of human and nonhuman actors that assemble around an issue affecting them. In the case of stadium construction, a material public is a group of human and nonhuman actors that assemble around a stadium proposal.

2.2. Object-Oriented Politics

Whereas Marres [15] extended Dewey’s ideas to broaden how we think of the public, Latour [24] prompted scholars to think about the nature of political issues. For Latour [24], the issue around which the public assembles is better understood as an object or a thing, rather than an abstract idea. Building upon Dewey’s argument that publics assemble around consequences, Latour [24] describes political objects as though they had some agency in forming publics:

Each object gathers around itself a different assembly of relevant parties. Each object triggers new occasions to passionately differ and dispute. Each object may also offer new ways of achieving closure without having to agree on much else. In other words, objects—taken as so many issues—bind all of us in ways that map out a public space profoundly different from what is usually recognized under the label of ‘the political.’ (p. 15)

Latour already formulated the key ideas for thinking about objects in this way when he established a distinction between *matters of fact* and *matters of concern* [23]. Matters of fact are real, objective, and incontrovertible actualities. Matters of concern are things whose reality, nature, or existence is uncertain and controversial, leading many other actors to be implicated in the controversy and its remediation [22,23]. Matters of concern gather a public because their uncertainty is itself part of the issue. The key questions for object-oriented politics, therefore, are how to bring the concern into the public and articulate it in a way so that the public can make up their mind about it [22,23].

A stadium proposal, for example, typically represents a stadium by showing its many effects including its economic impact, funding structure, aesthetics, and capacity. Sport organizations have also started including environmental effects in facility proposals and reports. For example, the National Hockey League publishes a yearly sustainability report that tracks impact and reports on goals to reduce energy consumption, water use, and waste [31]. Sport facilities can be seen as matters of concern, with impacts articulated to the public so the public can make up their own mind.

2.3. The Political Life of Objects and Their Publics

An unspoken assumption in object-oriented politics is that matters of concern can be resolved and turned into matters of fact. In 2007, Latour outlined the process of how objects can be differently political at different times. Latour [32] drew on Marres [21] and recommended using different meanings of the adjective “political” to qualify “certain moments, stages or segments” in the trajectory of an issue (p. 814). He used this strategy to describe the political life cycle of a blood screening procedure for Dutch women as a sequence of stages cycling from “political-1” through “political-5” (see de Vries [33]).

When integrated with his work on object-oriented politics, we can use Latour's political stages to understand the politics of sustainable stadium construction.

An object is political-1 when it produces new associations between humans and non-humans. This is a common topic of Actor-Network Theory, science and technology studies, and new materialism. It includes the plethora of objects that are being discovered and created by scientists and engineers on a day-to-day basis. However, previously unforeseen or unconsidered actors may also produce new associations that cause a stadium to be political. For example, the Hillsborough disaster in England, where part of a stadium collapsed in 1989 during a football match between Liverpool and Nottingham Forest causing 96 deaths and 766 injuries, led to a series of inquiries, including the Taylor Report being published in 1990, and prompted a new set of stadium regulations. A more pertinent example for the current context is the new sustainable building standards, which have made new associations between stadia and the environment, raising questions and debate about the goals of stadium construction [34].

An object is political-2 whenever it "generates a concerned and unsettled public" [29] (p. 816). This is the domain of Marres [21] and her interpretation of Dewey, which explains that public assemblies are presupposed by issues, or in our case, objects. Political communities do not create political issues, but assemble around ones that already have bearing on their life. Publics assemble around new stadia due to the costs or benefits they expect to incur. While researchers have studied interest groups and public consultation [35,36], they have not considered how nonhuman actors are included in the public, which is particularly important for considering stadium sustainability. It should also be noted that most objects do not pass from political-1 to political-2.

An object is political-3 when "the machinery of government tries to turn the problem of the public into a clearly articulated question of common good and general will" [32] (p. 816). Sport facilities are typically framed as an issue of public good. Arguments for new sport facilities include economic impact, psychic benefits, and other legacy effects, whereas arguments against point out the lack of economic impact, the excessive influence of interest groups, and the opportunity costs of public spending [1]. Notably, all arguments for and against stadia frame the issue as a question of common good and general will. Again, however, researchers have neglected to consider how nonhuman actors are included (or excluded) in debates of the common good.

An object is political-4 when it is included in the traditional procedures of deliberative democracy. As with all the other political adjectives, Latour [32] cautions that an object need not reach political-4, and nor should it. Citizens should not be required to reach a consensus on all objects. In the case of stadia in the United States, however, Kellison and Mondello [2] noted that many local governments subsidize stadia without a vote, and occasionally subsidize stadia even after the public voted no.

Finally, an object is political-5 when it has "become part of the daily routine of administration and management" [32] (p. 817). Latour gives the example of sewers in Paris, which are no longer political. His next remark is worth considering:

Should we abstain from calling [sewers] political in another sense of the adjective? Of course not, because not only did they used to be loudly disputed controversies (historians of science and technology, feminist scholars, do nothing else but 'repoliticizing' them through a kind of historical reverse engineering), but also because they might reopen at any moment . . . This is the stage that fascinated Michel Foucault as suggested by this much-abused expression of 'governmentality': all those institutions appear on the surface to be absolutely apolitical, and yet in their silent, ordinary, fully routinized ways they are perversely the most important aspects of what we mean by living together - even though no one raises hell about them and they hardly stir congressmen out of their parliamentary somnolence. [32] (p. 817)

Political-5 can also be seen in the case of sustainable stadium construction. A stadium that is built to acceptable sustainability criteria can become part of the daily routine of facility administration and management processes [32]. Like other political-5 objects, sustainable stadia become clearly defined matters of fact. Their life of controversy is put on hold. But, as Latour reminds us, a stadium may

be implicated in new associations, and therefore become political-1 again. For example, changes in sustainability best practices may show a stadium to be unsuitable, or some entirely unrelated issue may emerge. In what follows, we consider how the stadium follows the sequence of the political life cycle [32] by producing a public around the issue of the stadium [26], that was a matter of fact-turned matters of concern [23], as shown in Figure 1.

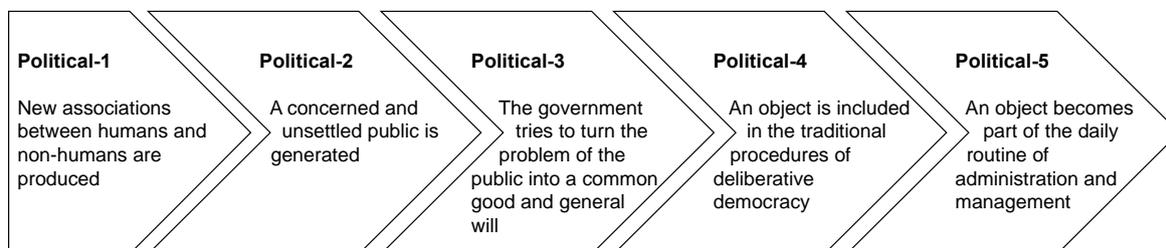


Figure 1. The Political Cycle.

3. Methodology

We used a case study of SC Freiburg’s carbon neutral stadium to theorize the object-oriented politics of sport facility construction. Case studies are consistent with the theoretical framework used in this study. Latour is most well-known for his work in Actor–Network Theory (which he often describes as a methodological approach rather than a theory) that uses in-depth cases and a set of sensibilities to study the world [37–39]. According to Latour [40], case studies should be conducted on matters of concern rather than matters of fact. We selected SC Freiburg’s stadium as a concern because there was substantial controversy within the city about where and how it would be built, and many human and non-human stakeholders were involved in the construction process. Thus, it serves as a case by which to develop new concepts for understanding environmental initiatives in sport [25].

3.1. Study Context: Freiburg, Germany

Germany has long been at the forefront of environmental initiatives, with some estimates putting the number of domestic environmental regulations as high as 35,000 by the mid-1990’s and growing, with additional regulations on renewable energy, the encouragement of green infrastructure, and emphasis on sustainable transportations becoming more prevalent in the 2000s and 2010s [41,42]. However, despite a so-called ‘feed-in tariff’, which has been implemented by the German government since the early 1990s that incentivizes solar energy use, only 10 of 18 Bundesliga clubs had an in-stadium photovoltaic plant or utilized renewable energy sources by 2014 [43].

The constitutional division of powers in Germany mean that states are responsible for the implementation and enforcement of federal law, where the states’ independence creates a high degree of variety between regulatory structures (e.g., a function of the general administration versus an independent special authority) [44]. Furthermore, at the local level, authorities perform mandatory and voluntary environmental duties, which includes planning responsibility for urban traffic and transport [44]. As a result, geographically-dispersed Bundesliga clubs are likely subject to differentiated institutional influence. This differentiation is particularly stark in the Bundesliga Sustainability Index, which ranks clubs on sustainability leadership, match-day emissions reduction, and fan behavior change efforts [45]. More specifically, in 2016, VfL Wolfsburg topped the index (anchored at 0 for the lowest sustainability and 100 for the highest sustainability) with a score of 93.50, compared with SC Freiburg, which was in fourth place with an index value of 58.50; RB Leipzig was in last place, with a value of 10.00 [45].

Freiburg is a city with a population of 220,000 people, located in southern Germany near the Swiss and French borders. Freiburg’s current developments were laid out after World War II, which left 85% of the inner city destroyed [46] (for images, see [47]): National Collection of Aerial Photography, n.d.). In the 1960s, the decision was made to keep the tram network as the backbone of urban development

in Freiburg. As Gregory [48] said, urban planning and development have always had a special impact on Freiburg. Citizens started to consider energy discussions when they did not want to accept a planned nuclear power station in the 1980s. “In 1986, with the nuclear catastrophe at Chernobyl fresh in their minds, Freiburg’s municipal council decided to have a future-oriented energy policy based on renewable resources wherever possible” [46]. This led to the development of Freiburg as a city focused on sustainability.

The city excels in the areas of transport, energy, waste management, land conservation, and a green economy that furthers environmental progress [48]. The Environmental Policy of Freiburg [49] details the extent to which the city is dedicated to putting the environment first. Notably, the document points to the desire for reductions in CO₂ emissions by the year 2030 and carbon neutrality by 2050 as part of a larger focus on climate protection [50], provides a detailed explanation for decreasing motor vehicle usage [48], explains improved waste management policy [49], proposes a noise management plan, and discusses the need to conserve the land and forest in and around the city. This city-wide focus on the environment is pertinent to understanding the process for the development of the new stadium. It provides an important case study for theorizing how the political process works in a city committed to environmental sustainability that might be translated into other contexts.

3.2. Case Study

SC Freiburg plays in the Bundesliga, the premier professional football league in Germany. We analyzed the political process around SC Freiburg’s stadium construction beginning in 2010, when Freiburg’s old pitch was deemed insufficient by Bundesliga, through to 2019, when the plans for the stadium were approved and construction commenced. First, a key informant who is part of the stadium construction team was interviewed about the process of stadium planning. The construction “team” is comprised of three separate entities: i.e., the club, the city, and the company. The company is the operator of the facility and is comprised of one member from the club and two from the city. The informant was a member of many key groups and was the best-positioned individual to provide information on the entirety of the process and to identify all actors. The key informant interview was cleared by the university ethics standards and designed to get an overall understanding of the process, and also to identify the material public and the actors who were implicated in the project. Consistent with our theoretical framework, actors were not limited to human stakeholders. We used Latour’s [37] definition of an actor as anything that made a difference in the stadium and the political process. For example, in addition to groups who opposed the new stadium location, the stadium construction process took into account native German grass, bird flight patterns, and air currents.

With an initial list of actors identified, we collected and analyzed documents to gather more information on the actors and to explain how they were included in the political process. Documents were collected from the city archives, Nexis Uni, social media pages of interest groups, local newspapers, and the club’s website. Nexis Uni search terms (translated here to English) were “SC Freiburg stadium”, “SC Freiburg vote”, “SC Freiburg solar”, “SC Freiburg construction”, “SC Freiburg lawsuit”, “SC Freiburg opposition”, “Freiburg flight club”, “Freiburg environment”, and “Freiburg ecology.” Immediately, we realized that environment and ecology returned too many results, and hence, restricted the search to those including “SC Freiburg.”

Documents were included in the data set if they referenced SC Freiburg’s stadium or the stadium vote. Two undergraduate researchers were trained to utilize Nexis Uni and instructed to examine and translate Facebook pages, Nexis Uni results, and local newspapers search results for any article that mentioned any of the above terms. For help with the local newspaper search, we utilized experts in the media department at a university located in the south of Germany. A third undergraduate student aided in the collection of information from local newspapers in the city of Freiburg.

In total, 17 documents from the city, four city websites, two club websites, two stadium oppositional group websites, two Facebook group sites, and 15 articles were included in the analysis. We were interested in framing the political life cycle of a stadium construction. Therefore, we followed Braune,

Clarke, and Weate's [51] six stages for conducting a thematic analysis by first deeply familiarizing ourselves with the data, developing themes focused on the five steps of the political life cycle, and writing up the results based on our framework. Our analysis was abductive in nature due to our iterations between the data and Latour's and Marres's writing on object-oriented politics [52]. The abductive approach allowed us use existing theory on object-oriented politics, rather than build a theory from scratch. The abductive approach also allowed us to extend the theory by offering new ideas such as the inclusion of actors into stadium design, the exclusion of certain actors through voting, and the practical definition of sustainability.

After analyzing the data, a second interview was conducted with the key informant. Whereas the first interview focused on the material public affected by the stadium, the second focused on the object of the political process—the stadium itself. From document analyses, we identified a series of components critical to the sustainability of the stadium. Our strategy was to ask the informant why these components were included, working backwards until we were able to link the stadium to actors. For example, the first author asked the informant, "You all are designing a roof capable of holding solar panels, why?" followed by, "Who is involved with this process?", followed by "Why?", and so on. This questioning continued until each sustainability component was linked to a concerted set of human and nonhuman actors responsible for its inclusion. Some new actors were identified during this process, and they were added to the data set. For example, our initial findings did not include all of the context to the neighborhood at the current location, such as issues with parking. Even though our case description is detailed and includes many actors, it is important to note that documents and key informant interviews are only ever partial representations of the situation. It is very likely that actors were involved in addition to those we have described; however, we believe unseen actors would be consistent with the framework we outline below.

4. Findings

We interpret the findings to explore how the stadium moved through a political process from when it was first seen as a concern through to when it was constructed as a matter of fact. During the political process, a group of human and nonhuman actors assembled around the stadium as a public; they had different interests in the stadium depending on how it would affect them. At the same time, the stadium started to take shape as the various interests of its public were reconciled in its design, although some actors were excluded from the public after a vote deciding on a controversial location. The final stadium reconciled the remaining actors' interests, including sustainability, into its design and construction, creating a matter of fact. The following sections describe the political process.

4.1. *New Associations with the Schwarzwald Stadion*

The Schwarzwald Stadion has changed shape many times since its construction in 1954. The infrastructure was redesigned in accordance with the environmentally-friendly principles of Freiburg. Freiburg's current stadium was one of the first to utilize solar power with a photovoltaic panel array on its roof, generating a total of 290 kW, and has 60 m² of thermal collectors. From the perspective of the club, the location in the neighborhood was good, the fans enjoyed it, and it had local character.

In 2010, the German Football League (DFL) changed the rules of its pitch size and notified SC Freiburg that their pitch was too small. The DFL indicated that the pitch was 4.5 meters too short, and that SC Freiburg risked losing its spot in the league if it failed to make its pitch the right size [53]. As a consequence, the field—which is often accepted as a matter of fact, a basic, background, object—leapt to the foreground as a concern.

The Bundesliga has a large-scale media agreement. It will earn 4.64 billion Euros between the 2017/2018 season and the 2020/2021 season as part of the deal, which was an increase of 85 percent over their previous four-year deal [54,55]. However, German clubs have complicated relationships with the media. The 50+1 rule, which guarantees the club, as a not-for-profit organization, owns the majority

of the club, has made some clubs resistant to the influence of investors, including the influence of television and new media [56].

While the DFL made pitch size a concern, the media added another problem to Schwarzwald Stadion. The pillars in the stadium obstructed key camera angles, meaning that media companies could not broadcast SC Freiburg games in the way that they wanted. As media influence and revenue grew, the pillars became a bigger concern. As a consequence of pitch size and the rogue pillars, SC Freiburg's membership in Bundesliga came into doubt. Whereas Schwarzwald Stadion has existed for over 50 years as a well-liked matter of fact, the two new associations with the media and pitch size rules made it a concern. Schwarzwald Stadion became political-1 and SC Freiburg had to decide what to do.

4.2. A Public Assembles around the Stadium

The concern was further complicated by Schwarzwald Stadion's location in the local neighborhood. Although the easy solution would be to expand the stadium, this was made impossible because the current stadium borders the local neighborhood. The issues with the current stadium were two-fold: first, Schwarzwald Stadion already lacked sufficient parking and space for public transport, and there was no room to expand the stadium without losing parking and public transport space. Second, Schwarzwald Stadion is already one of the smallest capacity stadia in the league, meaning it consistently ranks in the bottom for attendance, despite having a high percentage of tickets sold. Because the stadium bordered a resident area, its capacity was limited to 25,000. Thus, the stadium became political-2 because it impacted the neighborhood, forcing a public to emerge that resisted the expansion of the current site.

The city was originally against the building of a new stadium, suggesting that the people of Freiburg did not want a new stadium, and the majority of stadia referenda get rejected in Germany. Over the course of a couple of years, and many letters from the league, the city council eventually recognized that this was a serious matter for the city. Initially, the council took for granted the fact that the club played football, and now was concerned that the city's team might not be able to participate in the highest league. Therefore, in 2012, they first initiated a feasibility study for renovating the current stadium.

Upon review of the current stadium, the council concluded, "both for legal and economic reasons the necessary measures at the existing site cannot be implemented" [57] (p. 3). In the October 2014 summary writing of the decision to move forward with a new stadium, the council wrote the decision was made that, "the stadium does not meet the requirements of a modern football stadium to host games in the Bundesliga or higher-level competitions" [57] (p. 3). The stadium became political-3 because the city turned the stadium into a clearly articulated issue of the public good where it was previously the concern of the club. Since the stadium was now a matter of public concern, and since it could not be renovated, the city examined 25 alternative sites for the stadium.

Examination criteria included nature and environment, noise emission, and infrastructure. They decided on the location in Wolfswinkel, on the western part of the city, opposite of where the original stadium was located. The club was happy with this location because of the good transportation facilities nearby and the opportunity to build new infrastructure. However, the new location also implicated a set of new actors. The area was home to native grass, birds, a gliding club, and a growing university system, all of which were likely to be impacted by the new stadium. Thus, the material public, which initially consisted of the Schwarzwald neighborhood, grew to include a range of human and nonhuman actors who would be affected by a new stadium in Wolfswinkel.

Experts were brought in to speak for various nonhuman actors. They evaluated a series of "Knockout criteria," announcing the results in 2014. The knockout criteria were examined by experts providing opinions from air traffic and safety experts, nature and environmental protection, noise emissions, traffic development, and climate [58]. If any site was deemed to not sufficiently address all concerns, the site would be "knocked out." Only Wolfswinkel fulfilled all the knockout criteria. The following aspects were studied in detail according to the Freiburg [58] report:

- (1). Compensation for grass: experts projected 12 hectares of lost grass due to the building of the stadium. The loss must be compensated by a 1.6 times larger area replanted elsewhere, which is around 20 hectares. The grass area could be compensated by the displacement to multiple locations: Deponie Eichelbuck and Neuenburg (15.5 hectare), aerodrome (4 hectare), Breisgau-Hochschwarzwald and Emmendingen (50 hectares possible). The cost was estimated to be around 2.5 million Euros.
- (2). Birds: The aerodrome was an important habitat for raven and daw birds. The stadium would interfere negatively with the birds. The club commissioned analyses concluding the overall daw population in the relevant region in Germany would not be impaired. Requisite for special approval was given according to §45 federal nature-protection law.
- (3). Noise prevention: The distance between the stadium and the closest houses was calculated to be 400 meters; this is 10 times further than the Schwarzwald Stadion was from houses. However, stadium designers recommend constructing a closed bowl for further noise prevention. The results of the expert review showed that Bundesliga games would be within the guidelines of noise prevention. For European League and Champions League games, special approval would be provided.
- (4). Motor flight: Wolfswinkel is home to flying and gliding clubs. The stadium was proposed in a location that would be far enough away from the clubs to not impair motor flight. This was investigated and approved by the German flight security.
- (5). Gliding flight and parachute sport: Gliding flights and parachute could be impaired by the stadium. Four clubs, including 250 active athletes, were in the proximity. The city offered an alternative at the aerodrome in Bremgarten. Expenses for displacing the clubs were budgeted to 5 million Euros.
- (6). Environmental–meteorological impact: Wolfswinkel was known to play an important role as a heat sink that helped regulate the ambient temperature of Freiburg. Thus, the environmental–meteorological impact of the stadium was measured using local data and simulation. Each hour simulated required 24 hours of calculation. Analysts concluded the environmental–meteorological impacts would not reach the city center. Therefore, it was suggested that the stadium would not negatively impact the urban environment.
- (7). University expansion area: The stadium was to be built on a potential expansion area of the university. The city reached an agreement with the university in exchange for improved access to the university, i.e., increased rail line stops and bus stop expansion.

The stadium started to take form as it was designed to reconcile the large and heterogenous public that would be affected by its construction. It was proposed to be built in Wolfswinkel, but out of the way of motor flight. It was designed to have a bowl design, with rail line stops, bus expansion, and university access. Twenty hectares of grass were to be replanted, and gliding clubs might be impacted, with expenses paid by the club and city.

However, two oppositional groups arose from the city's inquiry. Pro-Wolfswinkel opposed the stadium being built at Wolfswinkel. This group was committed to the following [59]:

- Responsible handling of environmental and urban distress
- Protection against contaminated sites of the decommissioned landfill—now Wolfsbuck—and the airfield area
- Transparency and openness to the citizens
- Preservation of the city climate and the residential value in the west of Freiburg
- Preservation of the green lung of Freiburg
- Preservation of the infrastructure of the public Freiburg airfield with organ and rescue flights
- Stadium construction only at a location that is free of pollution from the environment and urban areas

The last point is where the majority of the issues arose for the group. Additionally, Pro-Wolfswinkel disagreed with the knockout criteria evaluation. In contrast to the city's report, they argued that the requirements for the stadium were not fulfilled. Specifically, on their press kit, available by download on the Pro-Wolfswinkel [59] website, they argued that the grass area cannot simply be relocated, that there is no real protection against noise, that there is no protection for residents, that flight security remains at risk, and that the building of the stadium contributes to the warming of the climate.

The other opposition group was Pro-Flugplatz; they campaigned for the conservation of the aerodrome and gliding impacted by the stadium. Pro-Flugplatz believed the city examined locations with a biased preference for Wolfswinkel. In January 2015, Pro-Flugplatz and the flight school operator, Udo Harter, commissioned a new analysis on the stadium and flight safety. According to that report, the stadium would endanger flights [60]. In another report commissioned by Pro-Flugplatz, engineer Heiko Tebben examined the situation and claimed that the stadium would be a direct obstacle in the main wind direction needed for flying. In addition, he stated that the behavior of air currents would be dependent on the shape of the stadium. It was his belief that the type of stadium required to allow the air flow to work for flights at the Flugplatz was not affordable [60].

In sum, a large public assembled around the stadium issue. Initially, the public was limited to the neighbors of the current stadium. But as more locations were considered, more actors were incorporated into stadium construction. The public was made of nonhumans, such as birds and grass, and humans such as people from the local university and Pro-Flugplatz. Often, human and nonhuman involvement in the stadium was intertwined, as seen in Pro-Wolfswinkel's arguments concerning the climate- and health-related problems, and as seen in the many experts who were consulted to speak for the nonhuman actors.

The stadium also began to take form as it was changed to reconcile the different interests of its public. The first parameters were set by the Bundesliga and media companies, i.e., the field needed to be a minimum length with clear sightlines. But further characteristics started to evolve as different actors found issue with the stadium; it was to be built in Wolfswinkel rather than where the Schwarzwald Stadion was located before; a bowl design was proposed to reduce noise; the city sought other locations for grass; Pro-Flugplatz wanted the stadium to be aerodynamically neutral to their activities. Thus, it seems as though the diverse interests of material public were going to be reconciled within the structure of the stadium itself. However, as noted above, the two opposition groups explicitly stated they were not going to be satisfied so long as the stadium was built at Wolfswinkel.

4.3. A Vote is Held to Exclude Some of the Public from the Stadium

The city moved to put the new stadium to a vote, since it affected many citizens and club supporters. Notably, the city was not necessarily required to hold a vote, but decided to do so anyway as it was in the best interest of the public, and interest groups may initiate referenda [61]. The city decided to hold a vote because the backing of the citizenry was important. Thus, the stadium became political-4, because it was included in the traditional procedures of deliberative democracy.

Public meetings were held to present citizens with plans for the new stadium. Designs and proposed locations were presented, and city officials listened to public concerns. In February 2014, the city announced a vote for building a stadium at the Wolfswinkel location. The stadium was approved with nearly 60% in support. The results suggest fairly strong public support for the stadium at Wolfswinkel, particularly considering that German public referenda for stadia and large projects have largely been unsuccessful, in part due to environmental concerns [62].

The vote meant the city and the club could go forward with planning and building the stadium without needing to satisfy the actors who opposed the Wolfswinkel location. Before the vote, the stadium could not reconcile the public's diverse interests because some opposed the location; after the vote, the stadium could reconcile the public's diverse interests, but only because the vote was used to decide on the location once and for all, which effectively excluded Pro-Wolfswinkel and Pro-Flugplatz from the stadium's material public.

4.4. Wolfswinkel-Stadion is Constructed

With the location approved, the city and the club worked to design a stadium that took into account all of the public’s concerns, including:

- (1). Cost: the club was responsible for 70 million Euros and the city and state put forth 38–40 million Euros for infrastructure, such as rail line extensions and roads.
- (2). Energy: energy was designed to satisfy the city and residents. Thus, the club proposed solar panels that integrate into the grid, supplying power for the rest of the city when available and providing the club with credits to purchase renewable energy when necessary.
- (3). Heat: the club proposed that heat to warm the pitch and buildings would be provided by a local factory that creates steam which can be capped and sent via pipe to heat the pitch and stadium.
- (4). Grass: around 20 hectares of grass will be planted as compensation for the lost grass at Wolfswinkel, at an expected total cost of around 2.5 million Euros.
- (5). Wind: the city and the club commissioned a number of analyses to placate the flight club to ensure the stadium would not block the wind necessary for glider and motorized flying.
- (6). Noise: although the club has incorporated noise into its design, concerns remain about the noise of stadium construction and noise from the games. Construction is not able to produce noise after 22:00.

When SC Freiburg’s stadium is complete, it will become a matter of fact, which reconciles the interests of a diverse public who assembled around an object that affected them. It will also become political-5, part of the daily routine of administration and management. However, it is also possible that the built stadium will become a concern in the future. For example, there is a possibility that the stadium will still interfere with the raven and daw birds living in the area. If new associations are made between birds and the stadium in the future, the stadium would become political-1 once again. Figure 2 shows the political life cycle process for SC Freiburg’s stadium development, whereby the public assembled around the old stadium as a matter of concern, the city involved the citizenry to create a stadium that meets the common good, experts were utilized and a vote was held, and ultimately, the stadium was constructed.

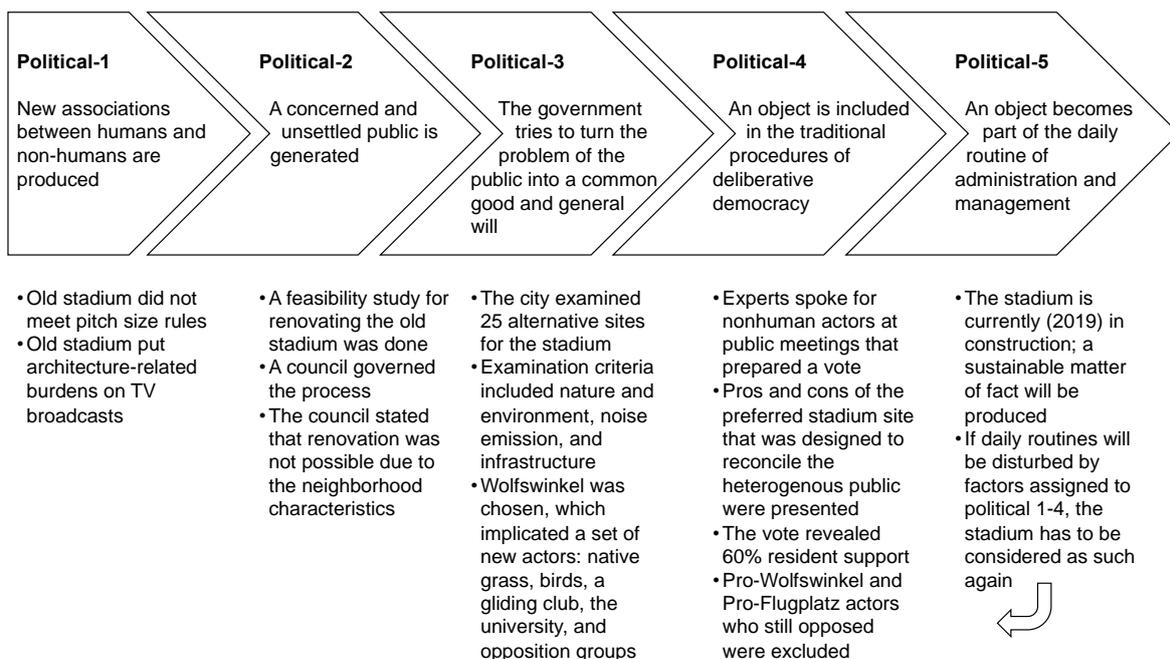


Figure 2. The Political Cycle of SC Freiburg Stadium.

5. Discussion

The aim of this article was to use the case study of SC Freiburg's carbon-neutral stadium to theorize the political process of stadium construction in a way that accounts for environmental concerns. Our theoretical framework consisted of three main departures from prior work on stadium politics. First, we used Marres' [15,21] concept of the material public to identify a heterogeneous group of human and nonhuman actors that assemble around an issue that impacts them. Like other cases of stadium construction, citizens and neighbors were concerned with SC Freiburg's stadium location and design [35,36]. However, the case of SC Freiburg also shows how grass, birds, wind currents, and heat sinks were included as important actors. This adds to work in sport sociology, such as Millington and Wilson's [17] study of Trump International Golf Links, Scotland, which shows the role that nonhumans play in physical culture and politics.

For our second departure, we used Latour's [22,23] concept of object-oriented politics. Rather than see the stadium as an issue, we examined it as a concern, a thing whose reality, nature, or existence was uncertain and controversial, leading many other actors to be implicated in the controversy and its remediation [22,23]. An interesting observation from the SC Freiburg case is how the stadium came to embody the various actors who were impacted by its construction. The stadium was moved to Wolfswinkel due to issues with expansion in the current location; it was bowl-shaped to reduce noise for its neighbors; it is capable of having solar panels on its roof to provide energy for the city; studies show it will not disturb flying; and it came with 20 hectares of grass planted somewhere else. It seems that the more interests the stadium could reconcile in its form, the closer it came to being a matter of fact. When Latour [63] analyzed the life and death of Aramis, a new transit technology in France, he wrote "if it can hold its whole contradictory environment together, then it will exist" [63] (p. 207). The same applies to Freiburg's stadium: if it can hold all the interests of its public together, then it will be built.

For our third departure, we used Latour's [32] idea of political stages. Rather than focus on the politics of voting, we used different political adjectives to describe the various political stages of the stadium. The stadium was political-1 when new associations were made by the Bundesliga and media companies. It was political-2 when the material public assembled around it. It was political-3 when the city made the stadium an issue of the public good. It was political-4 when it was voted on. And the stadium will become political-5 when construction is finished. Latour's idea of political stages is beginning to be used in other contexts, such as in the understanding of the concussion crisis in the NFL [64], but it may be especially well-suited to studying new environmental issues in sport.

Taken together, these three concepts provide a new lens through which to examine stadium politics and sustainability. A proposed stadium, a concern, becomes a real stadium, a matter of fact, if it can reconcile the interests of the public that assembles around it. Each new actor who assembles around the stadium demands something of it, transforming the stadium—a little, a lot, or not at all. Some actors demand something of the stadium that cannot be reconciled with what others want, in which case they are excluded from the public. Should all these requirements be met, the stadium will be built, a sustainable matter of fact.

Our theory application also suggests a pragmatic definition of stadium sustainability: a stadium is sustainable when the material public's environmental, social, and economic interests are reconciled in the stadium as a matter of fact. For example, Freiburg's new stadium is pragmatically sustainable because it reconciled the interests of grass, birds, neighbors, city ambient temperature, residents' energy needs, local ordinances, and wind currents. This pragmatic definition has some obvious shortcomings compared with a normative definition of sustainability, applied to the stadia context. First, and most telling, two stadia built for different publics may be subject to wildly different technologies, building standards, and interest groups, and therefore, are likely to be built differently; but according to our pragmatic definition, they could both be defined as sustainable so long as they reconcile their material public's interests. Thus, there is no way of ensuring that pragmatic sustainability will help with large-scale issues such as global warming. Second, a stadium that was once considered sustainable

will be defined as unsustainable if the interests of its public change. Most environmental problems, however, require a long-term view of sustainability.

The pragmatic definition of stadium sustainability has two main advantages. First, it shows how sustainability enters public discussion as a political issue, and how it becomes incorporated into stadium design. A normative definition of stadium sustainability implies that all stadium-related decisions should be made with sustainability and its pillars (economic, social, and environmental) in mind. However, this is simply not the case for most stadia built around the world. Freiburg's stadium meets high standards of normative sustainability because many members of the material public raised the issue of environmental friendliness.

Second, our pragmatic definition of stadium sustainability demonstrates how the political process plays an important role in the achievement of sustainable outcomes. In the case of Freiburg, the city decided to consult the public and hold a vote, even though it was not needed. This decision reflected Freiburg's history as a resident-involving and green city. If such a stadium had been built in the United States, it is likely that far more actors would have been excluded from the material public and left out of the final design and building. Therefore, it is important to recognize how the political and cultural context influences whether or not nonhumans (or humans for that matter) are included in material public.

Our pragmatic definition of sustainability also has an implicitly democratic leaning, and is consistent with other work on democracy and sustainability in sport mega events [65]. For example, although some scholars described the Beijing 2008 Olympic Games as sustainable [66,67], Hayes and Horne [65] argue that the Olympic Games are unsustainable if sustainability includes the political participation of civil society. According to Hayes and Horne [65], Beijing 2008 and London 2012 fail to include the political participation of civil society, and are, therefore, unsustainable. Our pragmatic definition of sustainability includes the participation of civil society as the material public.

Researchers can utilize this pragmatic definition in further developing an understanding for the managerial decisions made by organizations constructing new stadia. In this case, bolstering our pragmatic definition with stakeholder theory [68,69] to better understand organizational decision making and the prioritization of particular stakeholders may allow scholars and managers to better describe and analyze the process surrounding a particular stadium's construction. The limitation of stakeholder theory is that it assumes stakeholders are humans. An advantage is that stakeholder theorists have gone some way to explaining why certain stakeholders' inputs are included, while others are not (those who have power, legitimacy, and urgency) [70]. In this case, a vote, rather than stakeholder characteristics, was used to decide which stakeholders to include. However, future research might benefit from integrating stakeholder theory into our framework.

In conclusion, the case study of SC Freiburg's carbon neutral stadium showed that environmental concerns were included through a political process that incorporated the interests of a diverse public of human and nonhuman actors (while excluding some actors whose interests could not be reconciled) to produce a sustainable matter of fact. The environmental concerns may relate to social as well as economic concerns when stadia are approved, financed, designed, and constructed. In this paper, we explored the construction of an aspiring carbon neutral stadium through the lens of Latour's [32] political life cycle in stages. This framework, developed throughout the paper, provides a new means with which to explore these issues, and is a framework that can be utilized by other researchers. We further explored a pragmatic definition of stadium sustainability: a stadium is sustainable when the material public's interests (mainly environmental in nature, but also economic and social) are reconciled in the stadium as a matter of fact. One practical take-away for environmental activists, government officials, stadium planners, and sport organizations is to make sure that both human and nonhuman actors with sustainability concerns are included in the stadium's material public. For example, researchers have started collecting and linking actors who were not previously considered in sport spectatorship. Bunds and colleagues [9] discovered that tailgating increased air pollutants

before and after sport events. By including more actors with sustainability concerns, stadia are more likely to be built to satisfy pragmatic and normative sustainability criteria.

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