

We would really like to thank the editor and the reviewers for their encouragement and detailed feedback which has helped to improve the paper in terms of both concision and precision as well as reaching out to more readers. The point by point description of changes are below: the reviewers' comments are in red and our response is in black.

Reviewer 1 comments

I am not convinced that it is required to introduce the concept of grammar of graphics and embed the used visualization in this framework on such a level of detail like in Section 5. Of course some elements of the grammar of graphics are used in Section 5.2 to argue about facets, levels, aesthetic variables, and mappings, but if the reader does not know about this framework, the introduction and explanations about this concept/framework provided in Section 5 is not enough to follow the later argumentation. I would like to see some more details on the concept/framework on the grammar of graphics, or not using the concepts in the parts of Section 5.2 and paraphrasing it without using the terms from the grammar of graphics. I think that it is doable to explain the construction of the visualization without using this concept/framework, because the mappings are quite straight forward. I would like to see (a) either extend the introduction to grammar of graphics and the basics needed to argue in more detail about the embedding of your visualisations using this concept/framework, or (b) remove it.

response

comment 2

response

I have to confess that I do not know anything about the sport cricket and it may be unthinkable for people from countries where cricket is a national sport, but I really had difficulties to follow the example in Section 6.2. The basic hierarchical concept of over—inning—match—season was understandable, but I think that some parts need to be revisited and clarified for also reaching readers not knowledgeable in cricket. Especially the discussion on the interesting questions raised are a bit difficult to follow without knowing much about cricket. For example some terms should be at least briefly explained or removed if not necessary for the explanation, e.g., Twenty20 format, fielding, bowling, dismissal, wicket. I do know a lot about different sports and also the basic idea and structure in many sports, but cricket was never on my radar. Apologise my ignorance about cricket.

Thanks for the advice. We have added a description of the game cricket in the first paragraph of Section 6.2 so that each new terminology applicable for cricket (and relevant for the following analysis) is highlighted in italics and briefly explained. We believe that this will help the readers not knowledgeable in cricket to also follow the presented analysis.

comment 4

response

Reviewer 2 comments

What is the definition of 'period'? Is the period defined on the grouping or on the granularity? Is the period denoted by P or (R, P) in Definition 6? From Pages 6 Line 55 to Page 7 Line 7, period was referred to an integer (7), and two time granularities (one year and 400 years). Are they consistent?

Period is defined for a pair of granularities (G, H) . In Definition 6, the period is defined by P , which is briefly defined while explaining Definition 6. Thanks for pointing out the inconsistencies. We have now made it consistent.

What is the definition of 'grouping'? Though 'G groups into H' was defined in Definition 5, there is not a notation of grouping (G, H) until we see grouping $(day, month)$ at Page 7 Line 7. Please rephrase the sentence each month is a grouping of the same number of days over years on Page 7 Line 5.

We have used the term 'pair' instead 'grouping' to avoid conflict with the definition of 'groups into' and rephrased the sentence.

What is the definition of aperiodic linear granularities? On Page 11, Definition 10, M_i are aperiodic linear granularities. If M_i are aperiodic, then is M also an aperiodic linear granularity? What is the relationship between aperiodic linear granularity and aperiodic cyclic granularity?