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## Query driven visualization of large scale multi-dimensional astronomical catalogs

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# Dankwoord

It's done, finished!

Writing this thesis was a long journey on which many of you accompanied me, and I would like to take some time to reflect on that. There are so many people that I relied on or learned from, and I am not sure whether I reciprocated you all enough! In these few pages I'd like to express my gratitude, although I'll probably will not manage to thank all of you who helped me.

First of all I would like to thank my promotores. Most of my research I did under supervision of Edwin Valentijn and in many ways this has shaped not only my thesis, but also the way I work in general. I learned most from your optimistic nature and your constant focus on the future. For you there is only one direction, forward, which ensures that you will not be held back by the past. This made me more productive and offered structure in my research. Related, you are always supportive of the people around you, highlighting their strengths: even in our most fierce disagreements I felt that I had your backing.

Scott, we had a kind of episodic relationship, which made me a bit of an odd person in your group. I enjoyed discussing research with you and liked your pragmatic but at the same time thorough approach. You often forced me to think and draw a conclusion, which usually was already somewhere in my mind, but needed to be found. In particular I would like to thank you for noting that the position of an adverbial clause in English is the opposite from in Dutch. Jos, I already knew some of your students before I met you, and I'm glad to join their ranks. We can approach problems in quite different ways, and I learned to adapt to your more structured approach.

Furthermore I would like to thank my reading committee. You helped me see my research in different ways, making it better overall. Thijs, although you were often only involved in my research from the sidelines, you were always there to count on. Reynier, I appreciated our discussions very much, they always showed me a new perspective. The honesty in your comments always ensured me they were constructive. Michael Biehl, you gave me some good insights to my research.

I did my research as part of the Astro-VIS group, a collaboration between astro-

nomy and computer science. This was a fruitful collaboration, although with more challenges than I expected. Michael, I noticed that we had our best discussions when I formulated my thoughts in the same way and in the same order as they occurred to me. This had led to some interesting discussions that I couldn't have had with other people.

Bilkis, it was a good time having you as a colleague and a friend. I think you did an amazing job, performing research while experiencing both the happiest and the saddest possible events in your family. From our discussions I learned that we, astronomers, take many more things for granted than we know, because you wouldn't accept those without a proper reasoning. More than this, I liked our discussions about cultural differences. I think you will be very good in combining the best of both our worlds.

I was lucky to do a large part of my research in collaboration with OmegaCEN, the group that develops **Astro-WISE**. Everyone in this has their own expertise but at the same time everyone is also up to date of what the others are doing, creating a very well oiled machine. My discussions with all of you has shaped my research, and occasionally also my life perspective in general. Danny, we discussed quite a lot about my research and I wouldn't know what this thesis would have looked like without these meetings. You have often pointed me into the direction where I wanted to go, but either couldn't find or didn't even know I was trying to reach. Kor, you have influenced me and this work in many ways. You have helped me ingesting data quite often and introduced me to most of **Astro-WISE**. I based much of my work on yours, but I also tried to learn from your personality. In our conversation I noticed how you like clarity and you focus on the details that matter and I think my way of working improved quite a bit due to these discussions. Willem-Jan and Ewout, you two know all the details of **Astro-WISE** and you were always able to quickly explain parts I didn't fully understand. Your work laid the foundations to my **Astro-WISE** contributions and I hope I succeeded in modeling my contributions after yours. Gijs, thank you for always showing interest in my work, and your ability to understand what I mean, even if I don't do so myself. John, on several occasions you helped me organize my thoughts by having a high level discussion. And you bake some excellent cookies. Andrey, you helped me often with choosing the right terminology and being more precise in my writing. Furthermore, thanks for introducing me to music genres and tea blends that I never knew existed. Jeffrey, almost daily I run my scripts which test whether specific things that you like to do with my code still work, so much do I appreciate your interest in my research. You should take me observing the galaxy on my cover some time, so I can check the first Messier object of the list. Johnson, thanks for unknowingly helping me improve my writing. I've often looked up how you would formulate something when I couldn't find the right words. I'll miss talking with you about the differences between Uganda and the Netherlands. Gert, you have many admirable qualities as a scientist, you are curious, investigative, honest, thorough, inventive and you just get the job done. Thanks for introducing me to the world of galaxy evolution. Lastly, Marjolein, you helped me out in some difficult moments and it was interesting to see the **Astro-WISE** group and Kapteyn in general through your eyes as a relative outsider.

My research, mood and view on life, was greatly influenced by the people I shared my room with over the years. Chris, you are my example of a real scientist. You are smart, calm, structured, kind, friendly, wise, proud, social. I can only manage some of these at the same time, but you seem to succeed at doing all of them at once. Matias, you were a center of the social life in our institute. You were always able to keep things real, even under pressure, and always managed to let everything end in a good way. Parisa, you enhanced my views of the world with our discussions about Iran and the Middle East. I think you will be a great public speaker because you express yourself with your whole being. Johan, it has been a fun short time, having you in our office for the second time. I enjoyed our discussions of mathematics and the art of programming. The combination of your curiosity and your quick understand will make you an excellent scientist

I was very fortunate to work in the positive vibe of the Kapteyn Astronomical Institute and there are many others who were influential for this thesis. Matthijs, our lives were intertwined enough that you will always be ‘buurman’ even in Canada. Not only did we share a bar and an office, we even made an office in our bar and a bar in our office! Our weekly scheduling meetings were essential in structuring my work and gaining control over my research, and you were always there when I felt lost. Guido, it seems I’ll win this round! Marlies, I think you are doing absolutely great with organizing the open nights. It is quite fun to discuss ideas on how to make astronomy more tangible for de stadgers.

Rien, my office is located within your growing empire. Although I have been in your family for only a while, I think it is impossible to get out completely. It was nice too see your group grow, and you as both a scientist and a person with it. Bernard, you were important in me shaping myself as a scientist. You are wonderful in combining science, work, hobby, technology and family at the same time and I try to picture the future of my life in a similar way.

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Research is never a nine to five job, and combining my PhD with the rest of life has proven to be quite challenging. My *stamgenoten*, Janneke, Elsbeth, Harmen and partners probably had to endure my sleep deprivation or frustration the most. Thank you for keeping my spirit up in difficult times. Also those of you who left Groningen, Jolanda, Dirma, and Jisk, Ramon, Janine, I follow in your footsteps. Olof, it was always nice to discuss astronomy with you and thanks for providing an industry perspective on my thesis. Vincent, our add-on stammie, thanks for reading and even remembering several parts of my chapters.

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I could not have written this thesis without support from my family. In Germany the partner of a PhD student would also be called Doctor. Wieke, you deserve the title of Frau Doctor as well: this thesis would not have been possible without you, but it would also not have been worth it either! You were always there to support me, even when I must have been unbearable. You helped me structure my mind and always managed to convince me that everything would turn out all right. Most importantly, on many occasions you would remind me what is important in life, perhaps often unknowingly. Our relationship has become stronger and deeper in these four years, and together we can achieve everything we want.

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<sup>1</sup>We were unaware of the binomial coefficient back then.