An Examination of Live Broadcasting as a Communication Channel and Recommendations for

Improving the Bugscope Live Broadcast

Isa Betancourt

Environmental Communication 517

Drexel University

An Examination of Live Broadcasting as a Communication Channel and Recommendations for

Improving the Bugscope Live Broadcast

www.periscope.tv/isabetabug

Introduction

I began the Bugscope live broadcast as a weekly event in December 2016 with the aim of

creating a respectful, accessible community where entomological thoughts, stories, and

information can be exchanged between the viewers and host in a way that cultivates positive

attitudes, perspectives, and behaviors toward entomology. Ultimately, with the Bugscope I hope

to increase biological literacy and respect for biodiversity among the public. With this document,

I examine live broadcasting and how it functions as a communication channel for the Bugscope.

The second half of the document draws from communication theories and research to make

recommendations for improving the effectiveness of the Bugscope's message.

Live Broadcasting: A New Communication Frontier

During 2016, I became acquainted with the newest and biggest addition to social media

platforms: live video broadcasting. Before the internet, live video broadcasting had been a

novelty feature of mainstream television stations. With the rise of the internet, various websites

began to host live streaming. However, live streaming did not gain traction at the time because of

the poor camera qualities and internet connection (Stewart & Littau, 2016; Lee, 2015). Then,

around 2015, with advancing mobile technologies and the integration of live streaming

capabilities into mainstream social media websites, like Facebook and Twitter, the accessibility

and connectivity of live streaming was exponentially elevated. With the timely rise of live

broadcasting platforms such as Persicope, Meerkat, and Facebook live, suddenly millions of

social media users around the globe were connected with this new mode of communication

(Allen, 2015).

      Live broadcasting is a mode of communication unlike any before it. It not only offers the

benefits of audio and video communication but it also can be set up to enable viewers to interact

with the live broadcaster through instant text messages, creating a more engaging environment

(Lee, 2015). The video imagery is a powerful way to present messages to viewers because

imagery increases the perceived "truthliness" or gut acceptance of messages (Newman et al,

2012). For example, McCabe & Castel (2008) found that students rated neuroscience articles

more favorably when the article contained an image of a brain. Images are persuasive through

indexicality; essentially they are perceived as proof of a situation (Kelly & Nace, 1994; Messaris,

1997; Gass & Seiter, 2016). The commonly heard phrase, "No picture, no proof", relays that

concept. However, in a world where photos and recorded video are increasingly easy to

manipulate, live streaming may be the virtual media form that offers viewers the greatest level of

indexicality. Not only does live broadcasting involve video and audio as output to the viewers,

but the ability for viewers to interact and probe the broadcaster can empower viewers to more

accurately gage the genuineness of the broadcast. Such a feature is evermore precious in the

current era, which Kavanagh and Rich (2018) call an era of *truth decay*, where fact, opinion,

truth, and lies are a messy mix in the media.

The Creation of the Bugscope

      During my 2016 encounters with social media live streaming platforms, I noticed a lack

of science, especially natural sciences, on live streaming platforms. I have a particular interest in

being an ambassador for insects because despite the critical roles that insects play in the

maintaining healthy ecosystems around the globe, they have a relatively poor reputation among

the public. I have always been interested in exploring ways to more effectively connect with the

public about the importance of insects. Therefore, I decided to fill this gap I had encountered in the live broadcasting realm and try out this new media form for science communication. I set forth to choose the platform for my scientific outreach.

At the time, the several social media style live streaming platforms were up and coming. Youtube Live, Facebook Live, Periscope, and Twitch, were readily accessible for anyone with an internet connected camera and computer to utilize. Each platform's live streaming service was still relatively new, at around two years old, and it was clear that this form of media was gaining momentum. I chose Periscope as my primary live broadcasting platform because of the global map feature which increases the discoverability of the live stream and also because Periscope is a pure live streaming platform with no advertisements. In contrast with Periscope, Twitch was geared towards gamers, YouTube did not seem to have the same level of discoverability, and Facebook's platform contained a wide variety of other types of media, notifications, and advertisement distractions. The simplicity and discoverability of Periscope appealed to me.

<div align="center">

The Bugscope Live Broadcast

</div>

Background and Structure

I began live broadcasting without a formal plan or training. Bugscope production decisions have been made based on my entomological knowledge, past outreach experiences, intuition, and feedback from viewers. In 2017, broadcasts were every Tuesday at 2pm Eastern Time and in 2018 they have been every Tuesday at 4pm Eastern Time. Every Bugscope broadcast is tagged with the hashtag #bugscope and shared to Twitter. In this way, all Bugscope tweets, retweets, and related content may be easily aggregated on twitter and periscope by using the keyword "Bugscope" in the search bar or by clicking the hashtag. Other tags that I frequently use in the Bugscope broadcast titles to increase the reach to potential new viewers are #science, #nature, #talk, and occasionally #travel.

To craft regularly scheduled broadcasts, I choose a theme, review what I already know about the topic, do an hour of preparation which often involves preparing visuals (usually insect specimens) and fact checking. Then, I assemble a title and begin. Additional, spontaneous, Bugscope broadcasts occur when I encounter insect related events. For example, I have initiated special broadcasts upon encountering molting cicadas in the middle of the night, upon finding a nest of gregarious caterpillars one morning, and once when I attended an insect outreach festival (Betancourt, 2017).

When I begin a broadcast, I spend the first few minutes welcoming viewers into the broadcast, introducing myself, and introducing the topic of the day. Sometimes I'll make an announcement or share news and then I jump into the topic. The broadcast is largely conversational. I address relevant questions and remarks from viewers. Often, the direction of the broadcast is determined by the interests expressed by the live viewers. Some broadcasts feature special guest co-hosts or guest experts who are usually also entomologists.

Broadcasts are usually thirty minutes to one hour and fifteen minutes long. I encourage viewers to connect with me on Instagram or Twitter, if they have additional questions that were not answered during the live broadcast. After broadcasts, I occasionally post references, photos, or relevant related material that I may have mentioned during the broadcast to Instagram or Twitter.

Bugscope Growth

The Bugscope grew steadily in viewership throughout 2017. Support in the form of encouragement, shout-outs, and word-of-mouth recommendations from more established broadcasters, including other science broadcasters, helped grow the Bugscope during its initial months. In April 2017, the Bugscope broadcast received a wave of growth when one of the live

broadcasts were selected to be featured on the front page of the Periscope.tv platform, resulting in thousands of live viewers in the broadcast and hundreds of new followers for the channel.

Also in Spring 2017, the Bugscope received the gold VIP badge from the Periscope editors, acknowledging that the channel maintains quality content of public interest and that the channel adheres to community guidelines. Periscope distinguishes Gold VIP accounts by placing a golden badge next the the account's handle and creating a golden glitter effect around the account's profile picture on the profile page (See Appendix B). The badge accompanies comments posted by the account in chats.

In addition to being distinguished by the VIP badge and having access to Periscope administration office hour discussions, a benefit of the gold VIP status is that the Bugscope is able to submit requests to have upcoming broadcasts featured. Of the three feature requests that the Bugscope has submitted, two have resulted in a broadcast being featured. Features increase discoverability and viewership dramatically. For the Bugscope, features have brought in as many as 30,000 additional live viewers, thousands of replay viewers, and hundreds of additional followers (See Appendix A). The Bugscope was chosen by Periscope to be featured on the front page an average of once a month during 2017.

The Bugscope has reached several additional engagement landmarks during the last few months. At the close of 2017, the Bugscope surpassed 2 million engagement hearts. Engagement hearts are a form of applause. If a viewer is enjoying the broadcast, they can click on the screen to cause hearts to form to show their appreciation. More recently, in February 2018, the channel surpassed 5,000 followers and also received *super broadcaster* status. Super broadcasters are able to withdraw monetary tips that viewers send in the form of *super hearts*. All money received from the super hearts will be invested into back into Bugscope operations. For example, it will be used to pay for broadcast technology costs related to the Bugscope production.

Moving Forward

Until now, the Bugscope has been a rather spontaneous production. While I think that the spontaneity is part of the appeal, structure is necessary for long-term sustainability and continued growth of the Bugscope. The goal of this document is to examine how the Bugscope functions through the lens of communication theories and to use communication theories and research to make recommendations for the improvement of the Bugscope so that it may more effectively carry out its mission of cultivating positive perspectives and behaviors surrounding entomology, biodiversity, and wildlife conservation.

<div align="center">Analysis & Recommendations for the Bugscope Live Broadcast</div>

First Impression Appeal

The first part of persuasion in live a broadcast, after persuading oneself to do a live broadcast, involves gathering an audience. A broadcaster gathers an audience by persuading potential viewers to enter the broadcast. The elements presented to a potential viewer to enable them to select a broadcast are the title of the broadcast, a silent image or video of the live broadcast, location of the broadcast on the periscope website, and sometimes the physical location of the broadcast on a Periscope global map. There is no expanded description of a broadcast beyond the title and visual. With the high volume of choices and limited time to select a broadcast because of the risk of it ending or risk of missing out, it appears that the platform is set up so that viewers select a broadcast largely based on the peripheral route of persuasion as described by the Elaboration Likelihood Model (Petty & Cacioppo, 1986).

A live broadcast may be encountered on the Periscope global map, through the Periscope search portal, in a Periscope theme aggregated channel (#talk, #travel), on the live broadcaster's Periscope profile page, in Twitter feeds if shared by viewers, or on the home page of Periscope. If the broadcast host is someone the potential viewer is subscribed to, the live broadcast will

show up in their Periscope subscription feed page and the potential viewer may receive notifications on their phone about the start of the live broadcast. If the broadcast is featured, and therefore present on the Periscope home page, it is likely to be perceived as more important because it had to have been specially selected from a pool of tens of thousands of broadcasts by the Periscope editorial staff to be placed there. In contrast, all broadcasts are shown on the global map if location is enabled. Different global locations might attract different potential viewers. A broadcast is also likely to be perceived as more important if it is in the potential viewer's subscription feed since that would mean that the potential viewer already has an interest in the broadcaster's content or that a channel that potential viewer follows shared it, meaning there is a higher chance the potential viewer will think it is interesting too.

Taking these location and presentation factors into consideration in drawing an audience, a broadcaster has the most control over the title and the broadcast visuals. It is possible to influence the locations of the broadcast portal on the internet by motivating viewers to share the broadcast with their own followers, to tweet the broadcast, or to invite their own Periscope followers. It is also possible to increase the chance of being featured by requesting a feature through the VIP portal. Managing the most controllable elements, the titles, visuals, and content serve to not only attract potential viewers but also increase the likelihood that current viewers will share the broadcast with their network and that the broadcast will catch the attention of Periscope editors and be featured.

To draw a potential viewer's interest, the Bugscope may craft content that incorporates the elements of journalism and include wording in the title that communicates those elements. The eight criteria of newsworthiness are prominence, timeliness, proximity, impact, magnitude, conflict, oddity, and emotional impact (Pezzullo & Cox, 2018). I expect that of the eight distinguished criteria, oddity is the newsworthy element that the Bugscope can most easily

weave into a story since bugs have all sorts of odd body shapes, life cycles, and ecological roles. Timeliness is a criteria of newsworthiness that is an inherent part of live streaming because if viewers do not join right away they risk missing out on interacting and helping to shape the broadcast.

In constructing the title and visuals for the Bugscope, humor and warmth may serve as appropriate emotional appeals. I naturally smile a lot when sharing my entomological passion with people, which is helpful maintaining a sense of warmth and at the same time perhaps comes across as odd for viewers who do not often see people happily interacting with insects. The natural oddities found in the entomology world contributes an element of surprise which can be humorous especially through the use of analogies. For example, during a recent broadcast, when I was talking about how insects breath, viewers thought about how the tracheal tubes insects use to breath are like human veins and made the conclusion that insects have breathing veins.

To attract viewers, Bugscope visuals may utilize the indexicality of video, social proofing, and cognitive dissonance. Already, the golden VIP badge next to the broadcaster's handle likely attracts potential viewers through social proofing. Since the badge denotes a high level of viewership, potential viewers will likely be intrigued, enter the broadcast, or look at the broadcaster's profile page to see why. The over two million engagement hearts also serve as a form of drawing interest through social proofing because they signify that viewers invested in tapping their finger a combined total over two million times to applaud the channel's content. The combination of having a young human female holding and paying attention to insects in a video with many viewers may go against the perceived norms of viewers and motivate them to click into the broadcast. Similarly, many people are afraid of insects because they see them as dangerous and so seeing a happy person handing insects may cause them cognitive discomfort

and motivate them to find out more. Supporting this concept, the most popular Bugscope broadcasts have involved the handling of live insects.

Broadcast Content

"Tbh, I clicked on my first bug scope because Isa was pretty but stayed because it was actually interesting."   - Anonymous Bugscope Viewer, Fall 2017

Once a viewer has entered the broadcast, the Bugscope wants to promote central processing to cultivate a positive attitude, behavior, and appreciation for insects and entomology. Persuasion through peripheral processing is weak and ephemeral (Petty & Cacioppo, 1986). Attitudes and perspectives that are shifted by central the central processing route are more resistant to counter arguments. Since the peripheral route is primarily how new users chose to join the broadcast, it is critical to switch the persuasion mode and engage viewers in central processing by having them think actively about the message. The quote at the beginning of this section demonstrates how one viewer clicked into the broadcast for peripheral reasons and then stayed, potentially because of central reasons. To maintain central processing, it is important for the Bugscope message to be easily digestible by the audience. If the message is too complex, viewers switch to peripheral processing. This concept applies not only to the verbal or visual delivery of the content by the Bugscope host and guests themselves but also relates to the physical audio and video qualities. If there is noise in receiving the message whether it be caused by too much scientific jargon or bad video quality, the message will not be efficiently processed by the receiver through central processing. Fortunately, the ability to receive instant feedback from viewers allows the Bugscope host to gage the audience's level of understanding and adjust accordingly.

Not only can instant viewer feedback help understand if the message is being received adequately, but it also can give insight about the knowledge, opinions, and attitudes held by the

viewers about the topic at hand. As Social Judgment theory describes, by reading the remarks

and questions of viewers, I can then locate the strength and location of viewers' anchor points on

the humancentric-ecocentric spectrum and also in their understanding of insects and attitude

toward insects (Sherif, Sherif, & Nebergall, 1965). I can ask viewers questions for clarification if

necessary. Once I am familiar with where their anchor points are, I can cater my message to fit

within their latitude of acceptance and draw them toward the message I would like them to

understand and accept.

In order to achieve the goals of the Bugscope to promote pro-biodiversity and

conservation attitudes, the broadcast must maintain an experience for the viewers that evokes

positive feelings. Schaffner, Demarmels, and Juettner (2015) examined consumer responses to

various pro-environmental communication strategies and found that those which evoked positive

emotions garnered the most favorable responses. Loyau and Schmeller (2017) found that

individuals with a positive sentiment and knowledge were more tolerant and supportive of

conservation actions. Essentially, facilitating a fun experience for viewers will lead to retaining

viewership and instilling positive attitudes toward the Bugscope's pro-environmental messages.

Specific Bugscope Goals and Steps to Attain Them

I would like to continue to build the Bugscope community. I would like to both

strengthen the connections among existing followers and also continue to branch out and connect

with new viewers. Creating a branding plan for the Bugscope will help the Bugscope achieve an

image to further the mission. Emotional ties form between people and brands (Thomson,

MacInnis, & Park, 2005). If an organization does not have a clear or consistent identity, it might

be harder for people to identify with the brand long term. Defining the goals for Bugscope

branding might help with consistency in Bugscope and message construction. Based partially on

notes from earlier in the paper, to achieve the Bugscope goals of nurturing respect and positive

attitudes toward entomology, biodiversity, and conservation, I would like the Bugscope to appeal to viewers as warm, positive, moral, inspiring, healthy, and adventurous.

Eventually I would like to have the Bugscope community participate in citizen science projects. Some of these projects are virtual but some might involve viewers to physically mail in insect specimens. Mailing in specimens would be more difficult to invoke because of the diversion of personal resources required for the action to occur (Park et al., 2010). Such a request would test the attachment level of the viewers, where viewers with higher the attachment levels would be more likely to mail in specimens.

I have a rough sense of viewer attachment and participation levels from various events this past year. I have invited viewers to send me insect specimens but have not received any yet. However, I have received two parcels with insect jewelry from viewers and two letters when I was sick. I also was able to summon 36 viewers to take the Bugscope survey in Fall 2017 with the incentive that whoever took the survey would be entered into a drawing for one of five insect magnets. The building up of brand loyalty and relationships can be done through continuing to engage viewers in active participation. Active participation increases brand loyalty (Gass & Seiter, 2016). The interactive nature of the live broadcasts may act as a seed in facilitating brand attachment.

In addition to engaging in active participation as a route to reach the level where viewers will send letters with specimens, I can use the theory of planned behavior to make sending specimens seem more doable to viewers. The theory of planned behavior involves examining the target's belief about the outcome, evaluation of the outcome, normative belief, motivation to comply, and perceived behavioral control (Ajzen, Albarracín, & Hornick, 2007). Hopefully from being a part of the Bugscope community, the normative belief is that sending a specimen is an ok thing to do. The outcome is that it would maintain the relationship with the Bugscope brand and

also the specimen and sender would receive recognition on the broadcast and in the scientific

collection. Some external factors that would hinder the target from participating would likely be

the lack of familiarity with specimen collecting and packaging. To counter this, the Bugscope

can boost the viewers' perceived behavioral control through walking through the steps of how to

catch and package a specimen for mailing (Ajzen, 2002). Once the Bugscope starts receiving

packages of insect mail, the citizen science participation behaviors might be reinforced by the

snowball effect of social proofing.

Concluding Remarks

Live broadcasting is an inherently interactive and relatively new mode of communication

in the social media world that the Bugscope seeks to use for effective science communication.

Viewers can participate in broadcasts by giving immediate feedback through text and by sending

engagement and monetary hearts. Launched at the end of 2016, the Bugscope had a successful

inaugural year on the Periscope platform that was focused on gathering a following, learning

more about public perceptions about various entomological topics, and getting a sense of the

platform's viewer participation potential. In 2018, based on the examination of applicable

scientific communication literature presented in this document, I will focus on building and

strengthening viewer relationships through branding the Bugscope to further define its identity

and through facilitating positive and active participation. In this way, I aim to more effectively

carry out the mission of the Bugscope and work towards the project's vision of a world with a

more bioliterate and biodiversity-appreciating society.

Bugscope Live Broadcast Proposed Monthly Schedule

1st Tuesday of Month – Hi, I'm an Entomologist, Ask Me Anything (AMA)

Why: Takes advantage of the perks of Periscope interaction! If a person wanted to simply watch well composed video about insects, they would go to Youtube or Vimeo or turn on their TV. Viewers go to periscope to explore and interact.

2nd Tuesday of Month – Follow up topic from themes during the first week

Why: Gives agency to the viewers since the topic is determined by them and also gives a sense of credibility via trustworthiness and goodwill – two of the three criteria for ethos or speaker credibility which is one of Aripostle's artistic proofs. It touches upon trustworthiness because it shows I am listening and responding to their desires and goodwill because I want to help them understand and explore the insect topics they are interested in.

3rd Tuesday of the Month – In the News

Why: Entomology topics that are in the news are in the news because they are newsworthy. They had to have achieved a certain level of prominence, timeliness, proximity, impact, magnitude, conflict, oddity, and emotional impact to make it into the news. Breaking down and interpreting the content for listeners furthers the bugscope mission and perhaps the newsworthy nature will be enough to have viewers share the news and #bugscope through word of mouth in their own network.

4th and 5th Tuesday of the Month – Undetermined

Why: Good to have flexibility!

Note: I plan to continue to have guest experts join me on the scope. They are a big hit with the viewers and I enjoy interview experiences myself too. At the moment, scheduling and setting up hosting guest experts is not easy since resources are limited. Having guest experts is more of an opportunistic event.

References

Allen, B. (2015, April 1). Meerkat and Periscope will change the way you see video. Social

    Media Week. *Social Media Week*. Retrieved from

    http://socialmediaweek.org/blog/2015/04/meerkat-periscopewill-change-way-see-video/

Ajzen, I. (2002). Perceived behavioral control, self-efficacy, locus of control, and the theory of

    planned behavior. Journal of Applied Social Psychology, 32, 665-683.

Ajzen, I., Albarracín, D., & Hornik, R. (Eds.). (2007). *Prediction and change of health behavior:*

    Applying the reasoned action approach. Mahwah, NJ: Lawrence Erlbaum Associates.

Betancourt, I. (2017). The Bugscope. *Periscope*. Retrieved from www.periscope.tv./isabetabug

Blankenship, K. L., & Craig, T. Y. (2007). Language and persuasion: Tag questions as powerless

    speech or as interpreted in context. *Journal of Experimental Psychology*, 43, 112-118.

Gass, R. H., & Seiter, J. S. (2016). *Persuasion: Social influence, and compliance gaining*.

Kavanagh, J., & Rich, M. D. (2018). Truth Decay: An Initial Exploration of the Diminishing

    Role of Facts and Analysis in American Public Life. doi:10.7249/RR2314

Kelly, J. D., & Nace, D. (1994). Knowing about digital imaging and believing news

    photographs. *Visual Communications Quarterly, 18,* 4–5.

McCabe, D. P., & Castel, A. D. (2008). Seeing is believing: The effect of brain images on

    judgments of scientific reasoning. *Cognition*, 107, 343–352.

Lee, N. (2015, March 26). Twitter's Periscope is the best livestreaming video app yet. *Engadget*.

    Retrieved from http://www.engadget.com/2015/03/26/periscope/

Lessard, B. D., Whiffin, A. L., & Wild, A. L. (2017). A Guide to Public Engagement for

    Entomological Collections and Natural History Museums in the Age of Social

    Media. *Annals of the Entomological Society of America*, 110(5), 1st ser., 467-479.

    doi:https://doi.org/10.1093/aesa/sax058

Loyau, A., Schmeller & D. S. (2017). Positive sentiment and knowledge increase tolerance

    towards conservation actions. *Biodiversity Conserv*ation, 26:461.

    doi:10.1007/s10531-016-1253-0

Messaris, P. (1997). *Visual persuasion: The role of images in advertising.* Thousand Oaks, CA:

    Sage.

Newman, E. J., Garry, M., Bernstein, D. M., Kantner, J., & Lindsay, S. D. (2012).

    Nonprobative photographs (or words) inflate truthiness. *Psychonomic Bulletin and*

    Review. doi: 10.3758/s13423-012-0292-0

Novacek, M. J. (2008) Engaging the public in biodiversity issues. *PNAS*, 105(1):11571-11578

    doi:10.1073/pnas.0802599105

Petty, R. E., & Cacioppo, J. T. (1986). *Communication and persuasion: Central and peripheral*

    routes to attitude change. New York: Springer-Verlag.

Pezzullo, P. C., & Cox, R. (2018) *Environmental Communication in the Public Sphere*.

    Thousand Oaks, California: SAGE Publications.

Pontes-da-Silva, E., Pacheco, M. L. T., Pequeno, P. A. C. L., Franklin, E., & Kaefer, I. L. (2016).

    Attitudes Towards Scorpions and Frogs: A Survey Among Teachers and Students from

    Schools in the Vicinity of an Amazonian Protected Area. *Journal of Ethnobiology*,

    36(2):395-411. Doi:10.2993/0278-0771-36.2.395

Schaffner, D., Demarmels, S., Juettner, U. (2015) Promoting biodiversity: do consumers prefer

    feelings, facts, advice or appeals? *Journal of Consumer Marketing*, 34(4), 266-277.

    Doi:10.1108/JCM-11-2014-1220

Sherif, C. W., Sherif, M., & Nebergall, R. E. (1965) *Attitude and Attitude Change: The Social*

    Judgement—Involvement Approach. Philadelphia, Pennsylvania: Saunders

Stevens, S. M. (2009). The official rhetoric of permaculture: Motivating behaviour change

through environmental communication. *Australian Journal of Communication*, 36(2), 73-

91.

Stewart, D. R., & Littau, J. (2016) Up, periscope: Mobile streaming video technologies, privacy

in public, and the right to record. *Journalism and Mass Communication Quarterly,*

Special Issue: *Information Access and Control in an Age of Big Data.* Vol. 93(2) 312-

331. DOI: 10.1177/1077699016637106

Appendix A

An analytics graph depicting the number of viewers for each Bugscope broadcast. The nine

greatest counts represent the viewership of broadcasts that were featured on the

Periscope homepage.
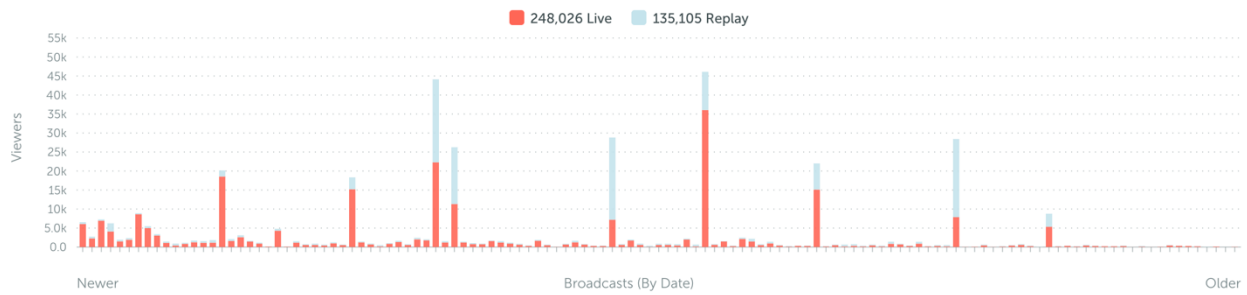
The graph here shows the number of viewers who began following the Bugscope while watching

a particular broadcast. The nine greatest counts occurred at times when the Bugscope broadcast

was featured.
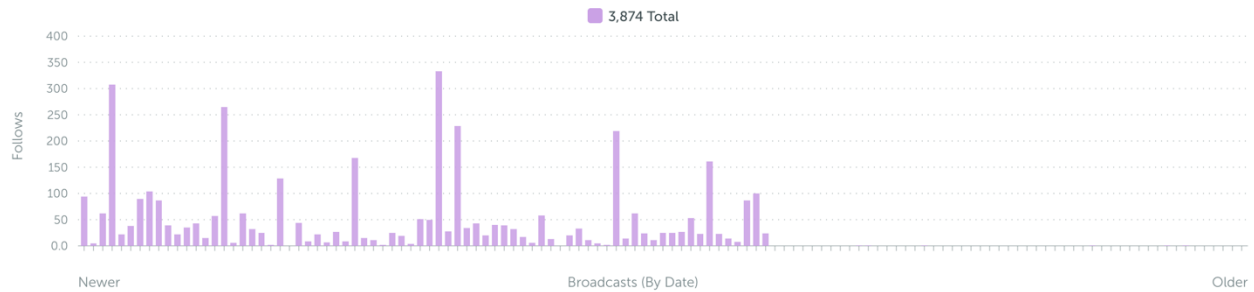
Appendix B

Profile page of the Bugscope. Both the gold star badge next to the handle (@isabetabug) and the

golden glitter around the profile picture indicate the Periscope Gold VIP status.