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## PUBLICLY AVAILABLE LECTURE WEBCASTS – E-LEARNING OR PROMOTION TOOL? CASE STUDY

**Bruno Schivinski**

Maria Curie-Skłodowska University in Lublin, Poland  
bruno.schivinski@gmail.com

**Radosław Maćik**

Maria Curie-Skłodowska University in Lublin, Poland  
radoslaw.macik@umcs.lublin.pl

### **Abstract:**

*This paper aims to show how universities interact with internet users by webcasting selected courses. Paper has exploratory case-study character, presenting example of Berkeley Web-cast initiative of University of California, Berkeley, webcasting undergraduate courses and on-campus events. On the base of short introduction to webcasting usage as an e-learning and promotional tool, the analysis of 3 purposely chosen different courses from Spring 2011 semester, with their content available on YouTube is provided. Timetables with number of views during research period for each event within selected courses are provided, as well as main audience description and geographical reach on the base of publicly available YouTube stats. Main conclusions from this analysis is that topic of the lecture influences importantly the view numbers and audience. Also after first two lectures number of spectators stabilizes, and public is more loyal. Estimated demographics suggest that important part of audience for each selected course were high-school scholars – possible prospects for universities. Geographical reach is global confirming proposition about not only educational but also promotional influence of webcasts. Additional analysis was performed to create a network map of videos with highest number of views. Result – the very dense network - may be perceived as a key element for generating new video suggestions to the users – which help them to get information about other courses and the university offer. Thus webcasting beyond being a tool for lectures delivery to students seems to be a very effective way for universities to expose their brands at an international level.*

*Keywords: webcasts, e-learning, case-study.*

## 1. INTRODUCTION

This paper aims to show how universities interact with internet users by webcasting selected courses. Provided analysis is an exploratory case-study, presenting example of Berkeley Webcast initiative of University of California, Berkeley, webcasting undergraduate courses and on-campus events. For analysis there were 3 different courses chosen, with their content available on YouTube. Additional analysis was performed to create a network map of videos with highest number of views. Short discussion about of webcasting usage in e-learning and as university promotion tool is provided in the text.

## 2. WEBCASTING AS A FORM OF E-LEARNING

E-learning is typically defined as electronically supported learning and teaching in all forms – this means that information and communication technologies and systems, are used to create specific media environment to implement the learning process (Tavangarian et al., 2004). Although it should be noted that proper point of view for e-learning require that the electronic media has to enhance the learning process in a way, which wouldn't be possible with other media used to teach and learn (Tavangarian et al., 2004). E-Learning gives the students greater autonomy in the sense of choice of the time, the content and the method they learn, in effect providing on-demand learning, thus eliminating the barriers of time and distance (Tavangarian et al., 2004).

There exist an extensive literature focused on e-learning and its evolution over the time in typical high-school, university and organizational settings. Starting from collection of early articles edited by Mealy & Loller (2000), including early work by Phillips & Pope (2001), up to recent publications, for instance: Rosenberg (2006), Clark & Mayer (2011) and large number of papers in education or business journals. Discussing this topic in detail is beyond the scope of this paper.

During last years e-learning became widely used alternative to traditional classroom-based approach, particularly for distance learners, and also valuable extension for traditional ways of education and training – creating blended learning possibilities. Growing usage of more or less sophisticated e-learning platforms (eg. Moodle) as well as tools such: course web pages/textbook web companions, discussion groups/forums, and e-mail/instant messaging/mobile communication, comes from experiments and also perception that they improve teaching effectiveness (Evans et al., 2004; Sulčić & Lesjak, 2009; Wu & Hwang, 2010).

Web 2.0 revolution created possibilities and demand for social media enhanced e-learning, and also to use webcasting in more than traditionally interactive way. Webcasting in common-sense is simply “broadcasting” over the Internet. The content – “webcast” is a media file distributed live or on demand using media-streaming technology, typically from a single source to many simultaneous listeners/viewers at the same time. In university or other e-learning provider context, webcasts typically contain live or recorded lectures with voice/video of lecturer merged with provided presentations – slides or pre-recorded video ect.

Experiment performed by Yunus at al. (2006) to investigate the effectiveness of the implementation of webcasting in higher education teaching, assessed how effective are three modes of webcasting lectures (live streaming, pre-recorded streaming provided to the group at certain time, and on demand streaming) provided to three different groups of students and one control group (attending to the face-to-face lecture). The overall analysis of that experiment

showed that the students who went through the on demand streaming group showed the most gain in the knowledge tests (Yunus at al., 2006).

### **3. PROMOTIONAL VIEW ON WEBCASTING LECTURES**

Typically, content provided on e-learning platform and their tools are accessible for students enrolled to the specific course or other registered users (for example employees in company participating in training program), who meet requirements and in most cases payment. Although open/publicly founded initiatives exist, they are often perceives as worse quality by their (potential) users.

Growing role of social media – and their open character – gives possibility to deliver controlled resources as lectures and other stuff to the public through such media, e.g. YouTube, Facebook and so on. In this case, provided materials are used mainly not by the users internal to the provider, but by people external to the content owner. This means that the content is consumed in example by students of other universities, employees of other corporations and – very often – by enthusiasts and hobbyists. There is also worth to note, that interactions with provided content are mainly text based and also open to the public in form of simple like-type considerations, more complete opinions, commentaries, additional links and so on.

Therefore, usage in informal education in this case plays promotional role increasing provider brand awareness, changing in effect attitudes toward the brand, and generate a viral effect among internet users. For university prospects, this can influence decisions where to study in the future. Also feedback from external users can be valuable to the content provider.

## **4. METHOD**

### **4.1. Berkeley Webcast Initiative**

Berkeley Webcast is an initiative of the University of California - Berkeley, developed by the BMRC - Berkeley Multimedia Research Center to share online video and audio of their full undergraduate courses and on-campus events (webcast.berkeley, 2011). By its initial name, the Berkeley Internet Broadcasting System, the first seminar webcast was distributed online on January 1995, however the broadcast of regular courses had its beginning in the spring of 1999 (California, U. of, 2002).

The site includes hundreds of full courses available through online streaming video, streaming audio, podcast and MP3 download. The media format available to internet users differs from courses and events, depending on technical needs and requirements of the lectures. Berkeley started to make the webcasts available to a broader public in 2006 when making the project accessible on iTunes and the video service YouTube in 2007 (webcast.berkeley, 2011).

### **4.2. Research material**

A research was provided from 01.03.2011 to 12.04.2011, giving a total length of 7 weeks. It focused on lectures from three distinct courses: Astronomy 7B (Introduction to Astrophysics); Computer Science and Electrical Engineering C149 (Introduction to Embedded Systems); and Sociology 185 (Global Sociology) - from Spring 2011 semester, available online. Those subjects were chosen in order to have three distinct groups with different interests in the academic field.

All the lectures presented in this paper are available to public on their official website - web-cast.berkeley.edu, at the App store – making the material accessible to iTunes users<sup>1</sup> (PC, iPhone and iPad) and also at their official channel<sup>2</sup> at YouTube.com.

The research was provided using data collected from the YouTube channel, since the service is the most popular video-sharing website in the world (Google, 2011), which contributes to brand the university and generate a viral effect among internet users.

## 5. RESULTS – VIEWS AND GEOGRAPHICAL REACH

Results in this part of the paper are presented across selected courses, presenting type of available material, total views information and geographical reach for selected lectures.

### 5.1. Astronomy course

The Astronomy 7B course (Introduction to Astrophysics) presents sporadic visuals during the lecture within most of its videos. The table 1 shows the data collected during the research, coming from YouTube available stats for particular clip – resulting in a total of 13 lectures. The missing lectures in the table were available only in audio format or not recorded due to academic reasons.

**Table 1:** Astronomy 7B – Lectures views statistics

Lecture #	Main audience		Uploading date	# of total views up to:						
	Gender	Age		01.03	08.03	15.03	22.03	29.03	05.04	12.04
# 1	M	35-64	18.01	1231	1323	1426	1565	1614	1691	1801
# 2	M	35-64	20.01	378	402	421	443	464	514	523
# 6	M	35-64	03.02	387	438	454	471	485	500	519
# 7	M	13-17	08.02	187	198	209	220	232	255	266
# 8	M	13-17	10.02	254	298	315	321	339	344	351
# 9	M	13-17	17.02	210	216	238	234	261	269	280
# 10	M	13-17	22.02	98	112	157	177	185	197	231
# 11	M	13-17	24.02	197	268	373	431	476	492	576
# 12	M	35-64	01.03	189	279	337	352	364	382	421
# 13	M	35-64	03.03	70	89	127	145	158	166	182
# 14	M	13-17	08.03	-	91	106	124	147	147	155
# 15	M	35-64	10.03	-	-	128	172	186	195	270
# 19	M	13-17	29.03	-	-	-	-	32	61	87

Source: Own elaboration based on YouTube statistical data.

The very first lecture has no visuals after approximately 42 minutes of the video, however, during the research, this video has been watched 1691 times by users from many different countries. It is a good example that even without any visual stimulus the material presented by the university was widely accepted by the public.

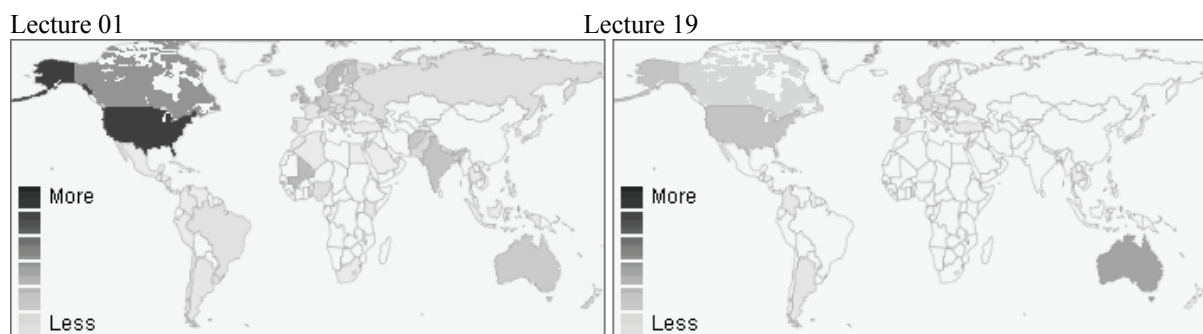
<sup>1</sup> <http://itunes.berkeley.edu>

<sup>2</sup> <http://www.youtube.com/user/UCBerkeley>

The average number of viewers for this course is about 315 unique users per lecture, with a standard deviation of 140 users (excluding lecture 1 as atypical), which means that many viewers are not following the course systematically as it comes online. According to the video statistics given by YouTube, men mainly watched the lectures in the table 1. The users' main age groups were 13 to 17 (probably high-school scholars) and 35 to 64 (probably astronomy enthusiasts or lecturers from other universities). This information is helpful to give universities the chance to build brand awareness among young users, which can be converted to brand consumption – in this case a graduation course at the University of Berkeley.

Geographical analysis makes it possible to check how the lectures are spread around the world. Picture 1 shows where the videos are most popular in. The first lecture can be used as a reference point when both videos are compared. The grey intensity scale represents how active the users in the countries are – the darker the country's colour, the more users' views comes from this country.

**Picture 1:** Geographical reach of selected Astronomy 7B lectures



Source: Own elaboration based on YouTube statistical data.

Since the lectures are in English, one could observe higher scale levels where English is the country's native language (North America and Australia) or used as a second language (Western Europe). The beginning of the Astronomy course was also popular in the Scandinavian countries, and some parts of Asia, South America and North Africa. The picture on the right (Lecture 19) proves that not only students from Berkeley are using the service regularly as a source of studies reinforcement (California, 2002), but users from many countries are following the course systematically as well.

## 5.2. Computer Science and Electric Engineering course

This course is available in a screen capture format. This recording video technique allows users to see exactly the media presented in class, not showing the lecturer, nor students. Lectures from this course have a different cognitive nature if compared to the astronomy course. This course is dedicated to people that have already acquired some knowledge in the area, which makes it much more selective. This is visible in table 2, where the number of views of the lectures is lower than the average in Astronomy lectures.

The demographic structure given by YouTube shows that the lectures were mainly watched by men and their age ranges were between 13 to 17, 25 to 54 and 35 to 64 for some videos. The average of views for the Computer Science and Electric Engineering course is about 134 unique users. However the standard deviation is lower than the Astronomy course, making a difference of plus-minus 50 users from the average (considering lectures 3–12 on 12.04.2011), which makes a more dense cohort study.

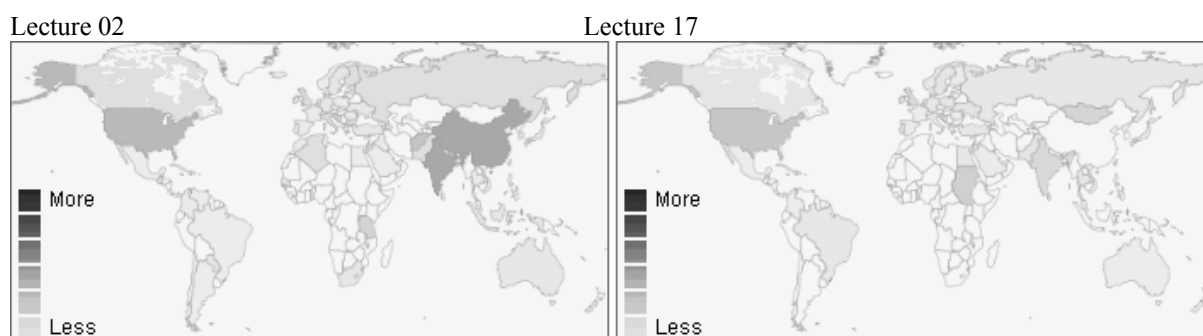
**Table 2:** Computer Science and Electric Engineering C149– Lectures views statistics

Lecture #	Main audience		Uploading date	# of total views up to:						
	Gender	Age		01.03	08.03	15.03	22.03	29.03	05.04	12.04
# 2	M	13-17	20.01	237	456	584	679	709	740	801
# 3	M	35-64	25.01	89	159	238	259	276	294	313
# 4	M	35-64	27.01	156	170	212	221	231	244	259
# 5	M	25-54	01.02	78	102	144	156	168	177	178
# 6	M	25-54	03.02	89	97	137	142	148	151	145
# 7	M	13-17	08.02	59	63	92	95	97	98	102
# 8	M	13-17	10.02	87	110	137	145	150	151	153
# 9	M	13-17	15.02	75	90	110	116	120	122	133
# 10	M	13-17	17.02	112	120	136	139	142	145	156
# 11	M	13-17	22.02	65	78	103	115	123	125	135
# 12	M	13-17	24.02	63	79	94	117	121	127	147
# 14	M	13-17	03.03	-	76	104	109	115	118	123
# 15	M	13-17	08.03	-	67	87	94	123	124	142
# 16	M	13-17	08.03	-	44	52	87	109	124	158
# 17	M	13-17	17.03	-	-	-	95	136	147	213
# 18	M	13-17	29.03	-	-	-	-	28	47	61

Source: Own elaboration based on YouTube statistical data.

In picture 2, is visible that Computer Science and Electric Engineering course is also popular outside of the United States. The second lecture shows that even more active than USA were China and India. Users from Europe, Central and South America, Asia, Australia and a few countries from Africa also seemed to watch the first part of the course. However, comparing both maps, the tendency described in the table 2 is apparent. Most of the views are not from random users, but from users that are following the course as soon as it comes online.

**Picture 2:** Geographical reach of the Computer Science and Electric Engineering C149 lectures



Source: Own elaboration based on YouTube statistical data.

### 5.3. Global Sociology course

The third course analyzed in this paper is the Sociology 185 (Global Sociology). The format of the webcast is a classroom record with international participations (via internet). This recording video technique allows users to see how students interact in class with the teacher.

Those lectures offer the internet users the chance to know the basics of sociology and globalization. This course does not require previous knowledge, which makes it much more attractive for nonstudents to follow. Table 3 presents the data gathered during the research.

**Table 3:** Sociology 185 – Lectures view statistics

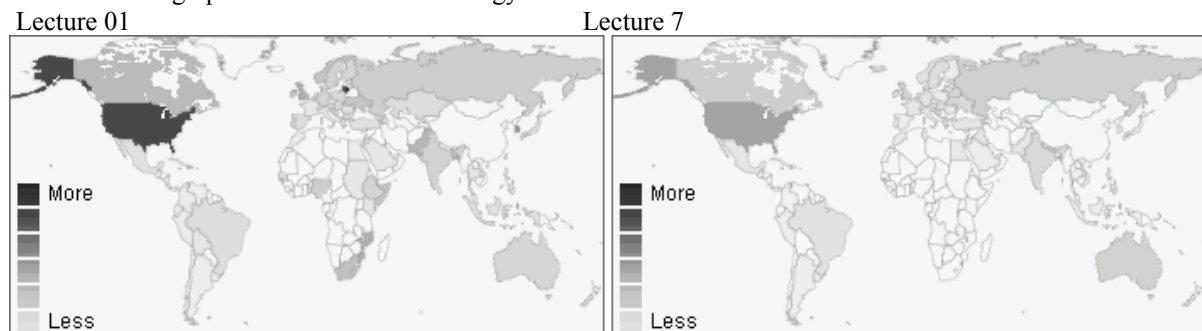
Lecture #	Main audience		Uploading date	# of total views up to:						
	Gender	Age		01.03	08.03	15.03	22.03	29.03	05.04	12.04
# 1	M	25-54	02.02	850	1000	1353	1454	1643	1740	1893
# 2	M	13-17	11.02	540	760	1003	1109	1174	1233	1294
# 3	M	25-54	16.02	327	439	510	567	615	632	667
# 4	M	25-54	25.02	358	423	459	537	605	648	702
# 5	M	13-17	04.03	0	192	268	289	335	342	374
# 6	M	25-54	14.03	0	0	203	357	475	509	523
# 7	F	35-54	19.03	0	0	0	387	553	609	738

Source: Own elaboration based on YouTube statistical data.

The demographic structure given by YouTube video statistics is similar to the two previous analyses. The majority of the users are men and the predominant age range is from 25 to 54 years old. The average number of views for Sociology 185 was about 440 unique users per video with a standard deviation of 130 users (for more typical lectures 3–7 on 12.04.2011). This information shows that among the courses analyzed in this paper, Sociology 185 was the most popular along with YouTube users.

Picture 3 presents the comparison between lecture 1 and 7, making a multi-country observation of how users are following the course. The first lecture had the highest level of users viewing from the United States and Latvia. There was also a high activity in Canada, UK, Pakistan and South Korea. However, the picture on the right (Lecture 7) shows the similarity between the beginning of the course and the last lecture studied in this research. The relatively high attention here goes non-English-speaking countries, like Russia and Brazil that maintained constant activity during the research.

**Picture 3:** Geographical reach of the Sociology 185 lectures



Source: Own elaboration based on YouTube statistical data.

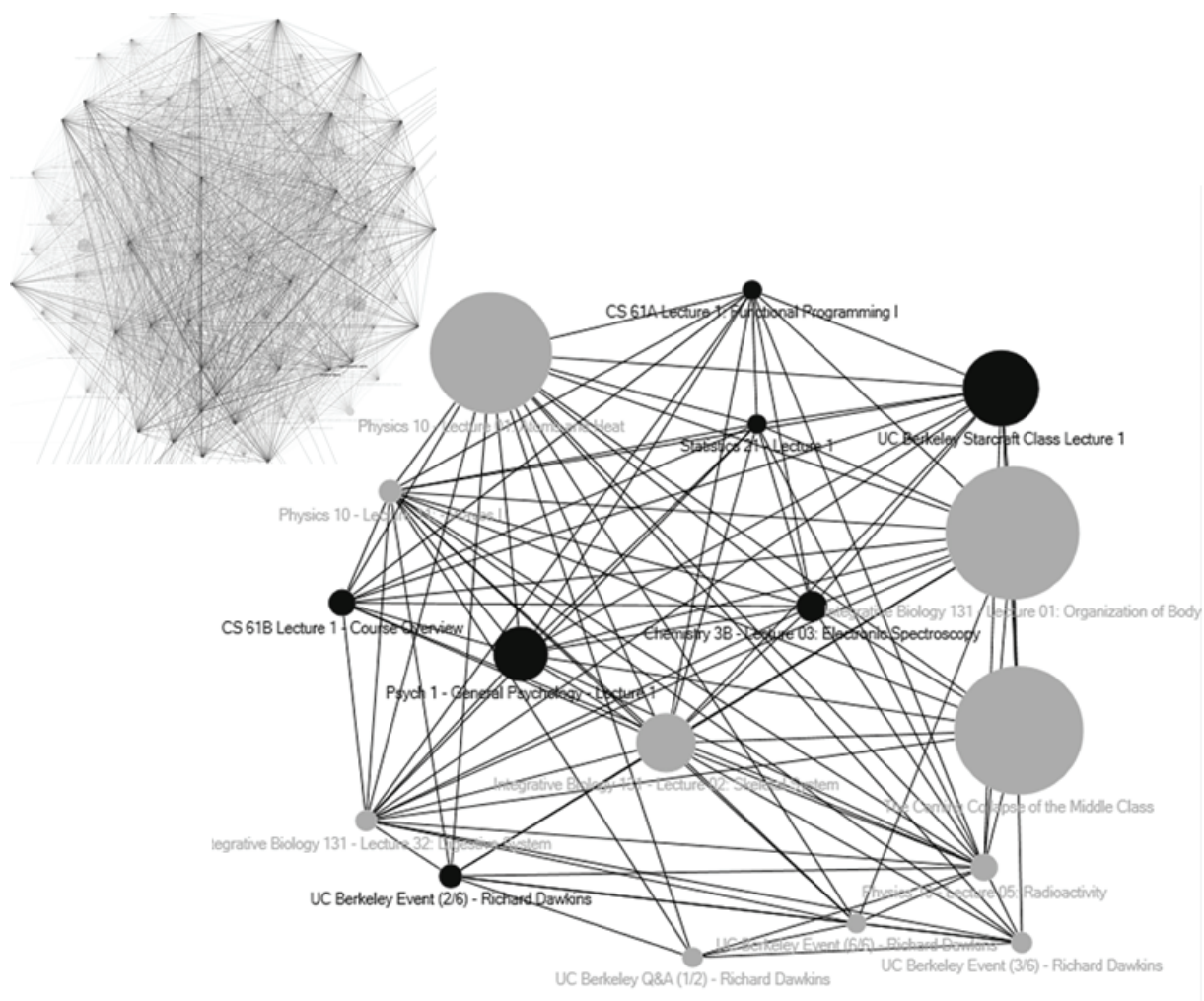


As already mentioned before, the willingness of users to follow the courses even when cognition barriers appear (in this case – language) can be favourable to successful marketing and branding strategies from universities.

## 6. RESULTS – UC BERKELEY NETWORK ON YOUTUBE MAPPING WITH NODEXL

Generating a network map allows to visualize how its elements are related to each other. Picture 4 presents two network maps rendered from a sample of n=100 from lectures uploaded from April 2010 to April 2011 - the most popular lectures available on UC Berkeley channel. Network maps were generated using NodeXL Template for MS Excel (NodeXL, 2011). The first render shows how the videos are linked, forming a very dense graph. A total of 3830 unique connections between the videos were generated from the data – where the maximum number of connections to a single lecture was equal to 95. The density of a network is a key element for generating hundreds of new video suggestions to the users – which can help them to know more about other courses and what the university offers to students.

**Picture 4:** Examples of video network mapping



Source: Own elaboration based on videos from UC Berkeley channel on YouTube using NodeXL software.



The picture on the right is a fragment of the same network, showing the lectures having the highest number of views. The size of the vertices represents the number of times a lecture was watched. The biggest points in the picture stand for the first lecture of Integrative Biology course and a sociology lecture titled Coming Collapse of the Middle Class – both with more than half a million views.

Lectures of physics, psychology, chemistry and statistics were also among the top views. A special attention should be paid for the UC Berkeley Starcraft Class Lecture with 286 thousand views - added to users' favourites list almost 3 thousand times. This lecture is an example of how universities can use viral tools to enhance their marketing communications.

## 7. CONCLUSION

Beyond being a tool for deliver lectures for own students, webcasting seems to be a very effective way for universities to expose their brands at an international level and create image of modern, social media oriented organization. It is also important to emphasize the role of technology and new media, which are making the diffusion process much faster than traditional media with lower costs, making lectures available to everyone that has an internet connection, spreading the knowledge to wide audiences. Thus, university provided webcasts are simultaneously playing educational and promotional roles, contributing to growth of knowledge.

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