Submission by Dr. Charles Livingstone re: 'gaming machines' operating at Perth Casino.

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The evolution of poker machines

What are the characteristics of a 'poker machine' in Australia, and have those characteristics changed from the time that poker machines were first introduced into Australia until today? If you consider that the characteristics differ in different parts of Australia then please explain those differences.

1. 'Poker machines' is an Australian term that describes a form of gambling machine developed first in the United States in the late nineteenth and early twentieth century. In the US and elsewhere, such devices are generally referred to as 'slot machines'. The first Australian slot machines were patterned on US style machines and were lawfully deployed in the mid 1950s in NSW, where they were legalised in 1956, having previously enjoyed an ambiguous legal status (McMillen et al 1999).

2. These devices were mechanical and typically had three reels operated by a mechanical mechanism which permitted the reels to spin after a coin was inserted. The reels would be actuated by a lever and would spin until stops engaged as the reels lost momentum. The number of outcomes on such devices is limited by the size of the reels, and by the limited number of reels. Thus, a mechanical 'poker machine' with three reels and 20 symbols on each reel would have 20^3 outcomes, that is 8,000 possible outcomes.

3. Of these, a small number would be payouts, most modest, but some more significant. If one jackpot involving three rare symbols (i.e., one symbol per reel) were the highest possible prize, the odds of achieving that outcome would be 1/8,000. Symbols on the reel might typically involve one high-reward symbol (an Ace, for example) on each reel, with other less regarded symbols (number cards, etc) making up the balance. Other symbols (Kings, Queens, etc) might also provide rewards, but at less value. These devices were called 'poker machines' because they often involved symbols derived from the cards in a deck of playing cards.

4. The theoretical outcome of mechanical 'poker machines' is derived from the number and type of symbols on each reel, the fact that each symbol should have an equal probability of stopping in the pay window, and the 'pay table', or payout schedule.

5. Poker machines evolved from these relatively simple mechanical devices into electro-mechanical devices by the 1980s. These resembled mechanical poker machines but the reels and the stops were electro-mechanically operated. More visual and auditory stimuli were available on such devices.

6. By the early 1990s, when multiple forms of gambling were legalised throughout Australia, 'poker machines' had become fully electronic, and often used computer technology to simulate the characteristics of earlier slot or poker machines.

7. These 'electronic gambling machines' (EGMs) as they are generally and internationally referred to allow for much greater diversity in prize and reel/display configurations and permit the use of a number of features not possible on mechanical or electro mechanical devices.

8. However, the basic characteristics of these devices remain unchanged. That is, they rely on a device capable of delivering a random outcome, of accepting a wager on that outcome, and providing a series of unpredictable intermittent rewards. These rewards provide operant conditioning stimulus (i.e., an unpredictable pattern of rewards) accompanied by classical conditioning stimulus (i.e., sounds and/or visual effects) that reinforce the rewards.

9. The capacity of electronic gambling machines to deliver stimulus is however greatly enhanced.

10. There are some differences in how EGMs are structured and presented around Australia, as detailed in the Gaming Machine National Standard 2016. For example, EGMs in NSW are permitted to accept wagers of up to $10 per 'spin' and have a load-up limit of $7,500 (the amount that can be credited at any one time). In Victoria these limits are $5 and $1,000, respectively. In Queensland and Tasmania, 'losses disguised as wins' are prohibited, but not in other states and Territories. There is also some variation as to the minimum return to player ratio (or 'RTP'), which prescribes the minimum proportion of all wagers that should be returned to users over the 'game cycle' of the machine.

11. Minimum RTP in Australia is generally between 85% and 90% depending on jurisdiction or venue type. The 'house edge' for a game will thus be equal to 1-RTP. For example, each spin of a 90% RTP game will deliver an average of 10% to the house, over the game cycle of an EGM game. This is high compared to casino style games where the house edge may be in the range of 1% to 2.5%, depending on the game. In WA, the RTP is a minimum 90% on electronic gambling machines.

Mechanisms pursuant to which poker machines were and are operated:

12. Mechanical poker machines were operated by a lever which actuated the spin of the reels. This could not occur until a coin had been inserted. The reels then came to a stop as they lost momentum and the mechanical stops deployed. If the spin resulted in a win, coins would be dropped from the hopper into a tray below the reel display and a bell or similar might be actuated.

13. If a jackpot was won, the machine would make this clear and an attendant would attend the machine to pay this out and 'clear' the jackpot from the machine. The machine would then be in a state to operate the next wager or spin. Note that the outcome of the wager would not be known until all reels came to rest

14. Electronic gambling machines are operated by loading the device with credit. This can be done using coins, banknotes, or a ticket. In some international jurisdictions credit may be loaded direct from a credit or debit card. In Norway, the device is connected to an account based system for access to the patron's pre-deposited gambling account (see Rintoul 2019).

A 'digital wallet' based system is currently being developed for trial in NSW and has been promised by Crown Resorts Ltd for operation of gambling at Crown casinos in Australia.

15. Once credit has been loaded, the device can be operated. Typically, this will involve selection of a game style (whether multiple lines will be selected, and how many) and the scale of wager for each line. Pushing the select credit button, or in some cases a play button, will initiate a wager. Once the relevant button is pressed, the device selects the next random number generated by the device's random number generator or generators and the machine's display generally simulates the spin of reels. (See Livingstone 2017)

16. Note that the result of the wager is known at the moment the button is pressed. The display is simply an artifice to simulate the spinning reels of a mechanical device.

To the extent you consider there is any distinction between poker machines and games played on poker machines please explain how poker machines games have changed from the time that they were introduced into Australia until today.

17. Poker machines in their original mechanical form had only one 'gameset'. That is, the machine permitted only one set of reels and pay tables to be operated. It would be possible to retro-fit different reels. This would be an extensive undertaking. Thus, the game being played was stable and relied on the spinning of mechanical reels to produce a result.

18. EGMs on the other hand are generally loaded with multiple gamesets via electronic chips which are inserted into the logic board. A single machine may have half a dozen or more gamesets loaded. These can be varied remotely in contemporary machines via the CMS (central monitoring systems) to which all machines in Australian jurisdictions (save the ACT) are connected.

19. Gameset may also be varied by using the operator controls accessible via the game interface, or in some cases by adding or substituting different game chips.

20. The games available may be distinguished by RTP, reelstrip configuration (i.e., the number of symbols overall, or the number of winning symbols per reel), pay table or other structural characteristics (allowable maximum lines or maximum bet, etc). Thus, a similarly themed game may be available with multiple RTP gamesets offering different patterns of rewards and prize structures. Note that Australian-style EGMs that utilise reelstrips are not permitted to vary the order of symbols, although different gamesets may vary these while retaining other characteristics of a particular game.

21. At Crown Melbourne, insertion of a loyalty card connected to the YourPlay voluntary pre-commitment system will facilitate unlimited bets and continuous operation (i.e., no interval between wagers).

22. In some cases, one machine may be loaded with multiple games which can be selected by the player. These multi-game machines may have multiple differently 'themed' games on offer, each of which has different characteristics, including RTP, volatility (a function of the pattern of rewards, RTP and wager size), symbols, and pay tables.

23. EGM games are now highly developed with multiple visual and auditory stimuli, very highly developed visual displays and sound effects, and varied and engaging symbolism and themes. These are constantly evolving and although many heritage games remain available in multiple gamesets, games may be varied as to theme, RTP, prize structure, and availability of a 'bonus' or 'game feature'.

24. These 'features' are a 'game within the game', usually triggered by scattered symbols, offering higher prizes during a series of 'free spins'. The rewards achieved during these features are of course factored into the game maths and their probability can be calculated with access to the game data (via documentation known as probability accounting reports, or PAR sheets). Overall, RTP of games takes these features into account.

Please also explain whether you consider there to be a distinction between poker machines and any other types of electronic gaming machines and, if so, why.

25. There are distinctions between types of gambling machines. These were catalogued by the Productivity Commission in its 1999 report, as set out in Box N.1. This is reproduced from the PC's report at page N.1.

26. Note that the glossary developed by the PC refers to 'pokies' (the common abbreviated term for poker machines) as 'an Australian term for multi-line and/or multi-credit video gaming machines'. The term 'slot machines' refers to all gambling machines featuring reels, noting that 'prizes are paid according to the final combinations of pictures on the reels' and

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Box N.1   Gaming machine glossary

AWPs — amusement with prizes machines. Three reel slot machines with 'skill stops' at the front of the machines to stop the reels. Most have an initial game that includes an opportunity to proceed to a more complex game.

Club or jackpot machines — similar to AWPs but with 4 reels and higher stakes and prizes.

Draw card machines — gaming machines on which card games are played, usually blackjack or poker. After the game is started the player must decide whether to keep or discard cards.

Pachinko — Japanese pinball machine. Players turn a handle which shoots small steel balls into a machine. The balls bounce off steel nails and into catchers, or trigger reel spins, which give winners a stream of balls which can be exchanged for non-cash prizes. These prizes can then be swapped for cash at a nearby independent outlet.

Pachislo (or pachisuro) — Japanese slot machine with reels and skill stops.

Pokies — an Australian term for multi-line and/or multi-credit video gaming machines.

Slot machines — gaming machines with three or more reels. Games involve starting the reels spinning and prizes are paid according to the final combinations of pictures on the reels. Reel spins stop automatically after the game is started. Note: some jurisdictions define 'slot machines' as all gaming machines (including machines with reels, video poker, blackjack and keno machines).

VLTs — video lottery terminals. VLTs are similar to slot machines in appearance, but give winners a cash value ticket which can be redeemed for cash, have a faster speed of play, and are more accessible.

Source: Productivity Commission 1999.

some jurisdictions define 'slot machines' as all gaming machines (including machines with reels, video poker, blackjack and keno machines).' Note also that Appendix N of the PC's report addressed issues around the categorisation of gambling machines in relation to questions as to how large a proportion of the world's gambling machines were located in Australia. Some gambling reform advocates had argued that 20% of the world's 'pokies' were located in Australia. This was refuted by industry bodies (including the then Australian

Gaming Machine Manufacturer's Association, now Gaming Technologies Australia, GTA) who argued for inclusion of all gambling machine categories in any such count.

27. Note that GTA now produce a 'World Count of Gaming Machines' (GTA 2019) in which they set out their estimate of the number and categories of gambling machines.

28. GTA define gaming machines using a definition adopted from NSW legislation (Gaming Machines Act 2001, at 4(1)), as a device that is designed:

> (a) for the playing of a game of chance or a game that is partly a game of chance and partly a game requiring skill, and
> (b) for paying out money or tokens or for registering a right to an amount of money or money's worth to be paid,
> and includes any subsidiary equipment.

29. The NSW Gaming Machines Act is, of course, the principal legislation which regulates what are commonly referred to as poker machines in NSW.

30. The relevant Victorian legislation (the Gambling Regulation Act 2003) does not define 'poker machine' but defines gaming machines as follows (s.1.2 at p.17):

> **gaming machine** means any device, whether wholly or partly mechanically or electronically operated, that is so designed that—
> (a) it may be used for the purpose of playing a game of chance or a game of mixed chance and skill; and
> (b) as a result of making a bet on the device, winnings may become payable—and includes any machine declared to be a gaming machine under section 3.1.3 but does not include—
> (c) a lucky envelope vending machine within the meaning of Chapter 8; or
> (d) interactive gaming equipment that is used or intended to be used for the purposes of interactive games and not for gaming of any other kind;

31. Tasmanian legislation (Gaming Control Act 2003) does not define 'poker machine' but defines gaming machines (at s.3.1) as:

> **gaming machine** means any device, whether wholly or partly mechanically or electronically operated, that is so designed that –
> (a) it may be used for the purpose of playing a game; and
> (b) as a result of making a wager on the device by the insertion of a gaming token, winnings may become payable;

32. The relevant Queensland legislation (Gaming Machine Act 1991) defines gaming machine (at Schedule 2) as:

> **gaming machine** means any device that is so designed that—
> (a) it may be used for the purpose of playing a game of chance or a game of mixed chance and skill; and
> (b) it may be operated, wholly or in part—
> (i) by the insertion of a gaming token into the device; or
> (ii) by the use of gaming machine credits; or
> (iii) by the electronic transfer of credits of gaming tokens to the device; or

(iv) by the use of gaming tokens held, stored or
accredited by the device or elsewhere; and
(c) because of making a bet on the device, winnings may become payable;
but does not include any device declared under section 343 not to be a gaming
machine.

33. This legislation does not refer to 'poker machine'.

34. South Australian legislation regulating gambling machines offers the following definition, at s.3(1):

> **gaming machine** means a device (whether wholly or partly mechanically or
> electronically operated) that is designed so that—
> (a) it may be used for the purposes of playing a game of chance, or a mixed game of
> chance and skill; and
> (b) it may be operated wholly or partly by—
>> (i) inserting a token, coin or banknote into the device; or
>> (ii) electronically transferring credits or tokens to the device; or
>> (iii) using credits or tokens in the device (whether those credits or tokens are
>> held, stored or accredited by the device or elsewhere); and
> (c) because of making a bet on the device, winnings or other rewards may become
> payable

35. This legislation does not refer to 'poker machine'.

36. The definitions of 'gaming machine' contained in relevant Northern Territory and Australian Capital Territory legislation are in similar terms. Neither of these refer to 'poker machine'.

37. The PC offered the following description of Australian gaming machines:

> Australian gaming machines are all operated by button push, regardless of the game being played.
> Gambling on these machines can be continuous — machines accept and pay out cash (so no breaks
> are required to cash out tokens) and machines credit wins, which can then be cashed out at a button
> push. Most slot machines have a choice of up to ten credits and nine lines per game, and most video
> poker machines go up to ten credits. Most modern Australian gaming machines have bill acceptors.
> The average speed of play in Australian machines is around 5 seconds per game ... (PC 1999, p.N.8).

38. The PC also observed that 'In Western Australia, only Burswood casino can operate gaming machines and these must emulate casino games (that is, no 'pokies' are allowed)' (PC 1999, p. N.3). There may be some gambling machines at Burswood that emulate casino games such as blackjack, roulette, or baccarat. However, it appears that there are certainly machines offering other forms of gambling that are not casino style games.

39. The PC ultimately developed three categories for policy purposes, as follows:

- high intensity machines — where maximum spending per game and the speed of play are comparatively high (these include Australian machines, US slots and other machines, Canadian slots and VLTs, as well as machines in France, New Zealand and South Africa);
- ·AWP-style machines — where maximum spending per game is low and the speed of play is slower (these include UK AWP and jackpot/club machines, German and Spanish AWPs and Japanese pachislot machines); and

- pachinko and UK crane grab machines — where the stakes and speed of play are the lowest of all and where the prizes awarded are toys (for crane grabs) and biscuits, cigarettes and magazines for pachinko (although these prizes can be subsequently exchanged for cash). (PC 1999, p.N.20)

40. 'Australian style' machines undoubtedly fall into the 'high impact' category because of their ability to combine the possibility of selecting multiple 'lines' or 'reels' on which to commit a wager, along with the ability to scale wagers as required. Thus, a game which has a one cent denomination or credit value if played on one line can permit wagers of $10 per event (or 'spin') if 20 credits and 50 lines are selected.

41. My view derived from the material presented here, and other research, is that the term 'poker machines' might be best understood as a vernacular expression referring originally to a mechanical device which has been entirely superseded in Australia. Contemporary EGMs are referred to using the same vernacular expression, or its diminutive form 'pokies'. These contemporary devices may bear a resemblance to earlier mechanical devices by the illusion of spinning reels but these do not appear to be necessary to qualify an EGM as a 'poker machine' or 'pokie'.

42. The Gaming Machine National Standard does not offer a definition of 'poker machine', nor of 'gaming machine' and a search of the document reveals that the words 'poker machine' do not occur. Gaming machines are not required to incorporate an illusion of spinning reels, although where these are used they are regulated in particular ways, as previously discussed.

43. The spinning reel format offers game designers a template to incorporate a range of design characteristics that have evolved into an extensive system to deliver multiple reinforcements and stimuli, thus rendering these devices both 'high impact' and potentially addictive (see Yucel et al 2018).

44. The template of a series of apparently spinning reels, however, is not the only design base available and the diversity of gambling machines globally demonstrates this. This includes all Australian gambling machines including those in Western Australia. I note that the GTA includes these in its count of gambling machines in Australia (GTA 2019, p.22) and does not distinguish between these and other forms of gambling machine on offer in Australian jurisdictions, all of which are regularly referred to as 'poker machines', in the vernacular sense.

45. To the extent that the term 'poker machine' is clearly defined it appears to be by the Western Australian Appendix to the Gaming Machine National Standards, at WA4.2, and by the Electronic Gaming Machine Policy.

46. The distinction between a gaming machine and a poker machine appears to be that:

  1. Spinning reels are not permitted (effectively prohibiting that specific illusion);
  2. No handle is permitted to operate the device;
  3. Any rotating discs must appear to rotate in the plane of the screen (note that this is also an illusion);
  4. Rewards must be determined by arrangements of symbols in either a vertical or horizontal line, rather than in the sometimes complex patterns available on multi-line EGMs (note that this requirement does not appear in the latest iteration of the EGM policy);

5. Fixed reel strips are not permitted, so that each symbol must be independently determined (a specification that was abandoned in the 2019 Appendix); and

6. A separate 'start' button is required, rather than using buttons that select the strategy or size of wager.

47. The key differences between gaming machines elsewhere in Australia and those operated in WA relate to the form of display (i.e., 'spinning reel' displays are prohibited) and (until 2019) the manner of selection of symbols consistent with a reward and the pattern in which they may displayed. Note that I have not observed any Australian EGM with a handle since the 1980s.

48. In a 'spinning reel' EGM, the result and thus the display may be determined by a random number generator that selects a result determining the 'position' of the centre line of the display for each reel, or for the overall result. Because Australian EGMs using virtual 'reels' are required to have fixed reel strips, the resting place of the centre line symbol will determine the resting place of all other symbols.Thus, a different RNG may apply to each 'reel' or to the 'reels' overall. Note also that an EGM with five 'reels' and 20 symbols on each 'reel' will have 20^5, or 3.2 million, possible results. A random number generator may select a result corresponding to any one of those 3.2 million results which will then be mapped onto the display, or five separate results may be applied to the resting position of each one of the 'reels'. An Aristocrat game called 'Dolphin Treasure' which is still in use, and which I analysed with colleagues (Harrigan et al 2014), has 35,640,000 unique outcomes in base mode, calculated by multiplying the number of symbols on each reel (i.e. 30 x 30 x 30 x 30 x 44).

49. The WA appendix (until 2019) indicated that each of the available symbols appearing on the display must be selected independently. Thus, where a column of three symbols appears, the order in which each of those symbols appears would not be determined by the position of any other symbol. This would be achieved by random selection of each position in the display, i.e. by an RNG that selects the symbol to be displayed in each available position, or the bucket in to which a ball is dropped, etc.

50. I note again that at the instant the play button is pushed, the result of the bet is known, whether with a standard Australian EGM or the style of game deployed in WA. The display is an artefact, whether spinning reels or otherwise.

51. Despite the apparent distinctions between spinning reel and other EGMs, the basic operation is essentially the same. A random number generator or generators are used to select the result of the bet. The display then simulates a spinning reel, a series of symbols dropping into a series of columns, or balls dropping into buckets, etc. However, all such displays are illusory.

52. Unlike a mechanical 'poker machine', the result is known at the instant the button is pressed, and whether this is a separate 'play' button or not is irrelevant. A mechanical machine requires the reels to stop spinning to determine the result, because of its mechanical nature. However such devices are obsolete throughout Australia.

53. Note that where EGMs offer casino style games, whether as Fully Automated Table Games, or as Multi-Terminal Gaming Machines, they are required to offer the same probability of rewards as the games from which they were derived. This requirement of the WA Appendix is not unique.

54. Note also that the minimum RTP for EGMs in WA is within the range specified for all other EGMs operated in Australia.

55. Accordingly I do not believe there is a real distinction between 'poker machine' style EGMs and other EGMs offered in Australia. The changes applied to the WA Appendix from 2019 render this distinction even more illusory.

The nature of EGMs at the Perth Casino

Having regard to the Policy and Appendix as they existed <u>prior to</u> September 2019, would EGMs then conforming to the Policy and Appendix have been poker machines? Please explain the basis for your submission.

56. The short video provided shows a game display in 'demo 'mode. The array of symbols is in a series of five columns, with four symbols displayed in the first, third and fifth columns, and five in each of the second and third columns, for a total of 22 symbols. The game is a one cent credit value denomination, and permits selection of the credits wagered per 'line', with 8 credits per line being wagered in the video. The bet size is $2.40, or 240 credits. It is unclear how the bet of $2.40 is calculated, although it appears that the strategy is to select 30 'ways of winning'. This is similar to a type of EGM utilising 'reel betting'. The most well known manifestation of this is via 'ReelPower'® games developed by Aristocrat Leisure Ltd, an Australian EGM manufacturer. The display shows a win across one 'line' (which is not a straight line) with three heart symbols. The reward is $0.40, so that the result is a 'loss disguised as a win', in that the reward is significantly less than the amount wagered. The display on this game is very similar to an EGM game using spinning reels, although the symbols are not displayed as though on a spinning reel. They do however take some time to come to a settled pattern and appear to rotate on their vertical axis before becoming clearly visible. However, once the display is at rest its appearance is indistinguishable from any other Australian style EGM. The game cycle appears to be around 3 seconds.

57. In my opinion this game appears to be essentially indistinguishable from games provided on 'poker machines', as in EGMs operated in other Australian jurisdictions.

58. YouTube video (a) initially shows an EGM derived from the Japanese game pachinko, wherein the displays purports to show a series of balls being propelled into the top of a 'tree'. This game is called Arishinko, presumably an amalgamation of the name of the manufacturer and the original Japanese game. A series of buckets with varying prizes are set out in the tree. There is also a bucket mounted on what appears to be a railway line which moves along beneath the tree as the balls are dropped. The video then shows an adjoining machine displaying a game which appears to be a version of pachislots, which has a similar arrangement of balls, buckets, moving bucket but with the addition of a three symbol line in the midst of the tree. Pachislots are amalgams of pachinko and slot machines whereby a winning combination in some circumstances triggers the slot machine element of the game, akin to a 'feature'.

59. Although the display is clearly distinct from an Australian style EGM, the underlying game maths are similar, in that the selection of outcomes is determined by an RNG and then mapped to a display on the screen. The form of display distinguishes this to some extent from traditional spinning reel Australian-style EGMs. The pachislots hybrid, however, contains elements of a traditional slot machine, although these are not activated in the video.

60. Relevant to this style of game Japanese regulatory authorities opted in July 2004 to amend Regulations under the *Entertainment Establishments Control Law* which provides the legislative framework for the pachinko and pachislot industries.

61. The revision required changes in pachislot machines (Regulation 5). Regulation 5 was designed to change the emphasis in pachislot development toward entertainment/amusement and broad user appeal and away from higher volatility, higher per capita expenditure and a reliance on regular players.

62. Regulation 5 had the specific intention of restricting the 'gambling characteristics' of pachislot machines whilst reinvigorating innovation in 'entertainment characteristics'. All old format pachislot machines were required to be removed from operation by September 2007 (Sega Sammy 2007; see also SMH 7/12/2006).

63. YouTube video (b) shows an unnamed game featuring a 5 column x 3 row array into which symbols are populated. Adjacent symbols appear to trigger rewards. The speed of operation appears to be around 7 seconds. The game is a 2c per credit denomination. Buttons allow selection of the credits bet per rack (up to 10) and number of balls in play (up to 15). Scattered star symbols appear to trigger a 'flying pig' feature which in the video pays off with a minor jackpot. The winning combinations appear to resemble reel betting games as discussed above. The game features a separate play button but the buttons controlling the strategy are very similar to those for any other EGM operated in Australia.

64. With the exception of the form in which symbols are loaded into the display this game appears indistinguishable from most Australian style EGMs.

65. YouTube video (c) shows a game called 'Mr Cashman' which is a name used for a standard Australian style spinning reel EGM developed by Aristocrat Leisure Ltd. In this case players may select credits bet per ball up to 20 and how many balls to play up to 20. There is also an option for 20 balls plus 5 credits which permits bets up to $10 per wager. The game appears to be a 2c credit denomination and display features a series of balls cascading down a virtual triangle fitted with pins. The bucket into which they fall determines the reward. Reels spinning in the plane of the display also appear to influence the colour of the ball and the outcome of the bet. The game appears to be displaying a feature involving 'free games'.

66. The display is closer in appearance to a pachinko-style game but offer multiple features characteristic of Australian style games. As previously noted, the display is an artefact and any display can be devised to interpret the results of the RNGs. The buttons permit selection of bet size and balls in play as with a standard Australian style EGM. The form of display distinguishes this game from traditional Australian spinning reel games but as with video (a), the underlying game maths are similar and the scale and method of strategy selection are essentially identical.

67. YouTube video (d) shows a game apparently called 'Jack's Gold'. The display for this game involves an array of 3 columns each of 4 rows flanked on each side by an array of 1 column, each with 3 rows. The payouts appear to be aligned with a reel-betting format as discussed above. The game appears to permit a bet size of $15. The video shows a 'feature' in operation with a 'big win' or minor jackpot apparently being achieved. The spin rate appears to be about 5 seconds. The video is entitled 'Casino pokie big win Burswood Perth' suggesting that the person filming it regarded the game as a 'poker machine'. The display and other characteristics of this game including the buttons allowing selection of the

strategy (credits bet etc.) indicate a strong similarity to spinning reel style Australian EGMs. The symbols rotate along their virtual axis before coming to rest as with the game presented in the short video provided to me.

68. In my opinion this game is essentially indistinguishable from other Australian style EGMs, other than in the display which does not utilise spinning reels. However, once the display is at rest its appearance is indistinguishable from any other Australian style EGM.

69. YouTube video (e) shows a game with a display of 5 columns and 3 rows. This game is similar to YouTube video (b). Apart from the method of finalizing the display (which is an animation of series of balls falling into a rack or column) this game is very similar to an Australian style EGM. Once the display is at rest its appearance is indistinguishable from any other Australian style EGM with spinning reels. Control buttons are only glimpsed in this video but appear to be similar to those displayed in YouTube video (b). This game also appears to offer reel betting as previously discussed.

70. In my opinion this game is essentially indistinguishable from other Australian style EGMs offered in other Australian jurisdictions.

71. Overall, the games displayed in YouTube videos (a) to (e), and the game displayed in the short video provided to me, resemble EGM games available in other Australian jurisdictions. This is particularly so in respect of the short video, and YouTube videos (b), (d) and (e). However, YouTube videos (a) and (c) also have characteristics similar to other Australian style EGM games. I would regard them as Australian style EGMs.

72. For the sake of clarity, the term 'Australian style EGM games' refers to games operated in other Australian jurisdictions which are generally referred to in the vernacular as 'poker machines' or 'pokies'.

Having regard to the Policy and Appendix as they existed <u>after</u> September 2019, are you able to say whether EGMs conforming to the Policy and Appendix would (or would not) be poker machines? Please explain the basis for your submission.

73. The effect of the changes to the WA Appendix and the policy applying after September 2019 were to:

1. Remove the requirement for independent determination of the position occupied by a symbol in the game display (i.e., permitting 'fixed reelstrips');
2. Reduction of speed of play to a minimum 3 seconds;
3. The pattern of winning symbols appears to be no longer confined to horizontal or vertical lines (i.e. multi line, multi directional winning combinations appear to be acceptable).

74. The effect of these changes is to make the appearance of games even more like Australian style EGMs as available in other jurisdictions in Australia.

75. Provided that games do not provide a display that appears to be a set of spinning reels, the display at rest may be identical to the display provided by an Australian style EGM available in other Australian jurisdictions. As observed in the videos referred to above (short video provided, and YouTube videos (b), (d) and (e)), this appears to have been apparent prior to late 2019.

76. Notwithstanding the prohibition on symbols utilised by other Australian style EGMs, games configured under the post 2019 policy and appendix would be essentially identical to

Australian style EGMs offered in other Australian jurisdictions. Note that symbols and other themes and characteristics of EGMs are constantly evolving and change regularly. Utilisation of novel symbols is very common.

77. As noted at 72 (above), the term 'Australian style EGM games' in this part of my response refers to games operated in other Australian jurisdictions which are generally referred to in the vernacular as 'poker machines' or 'pokies'.

If your answer to the question in paragraph 3.2 is different to your answer to the question in paragraph 3.1, please explain why.

78. In my opinion the games illustrated by the short video provided and the five YouTube videos referred to resemble Australian style EGMs. I have observed at 71 (above) that I clearly regard some of these unequivocally as Australian style EGMs.

79. A game approved subsequent to 2019 having regard to the changed policy and WA appendix could be a simple adaptation of any spinning reel Australian style EGM with the only modifications being removal of the illusion of spinning reels, the addition of a separate 'play' button, if not already provided, substitution of symbols, and altered artwork. Such a device would unequivocally be an Australian style EGM, or, in the vernacular, a 'poker machine' or 'pokie'.

Harmful characteristics of poker machines

If you consider the use of modern poker machines to be harmful or potentially harmful to patrons making use of those machines then please explain:

    (a)   the nature and extent of those harms or potential harms;
    (b)   what features or characteristics of those machines are likely to result in harm;
    (c)   why those features or characteristics are likely to result in harm; and
    (d)   in what circumstances those features or characteristics are most likely to result in the most harm.

80. All gambling forms have the potential for harm, although some forms are more likely to be harmful to more people than others. High impact Australian-style EGMs are undoubtedly amongst the more harmful forms of gambling, as noted by the PC in its 1999 and 2010 reports. It is notable that EGMs in Australia are far and away the most lucrative form of gambling (for their operators) with net revenue of $12.7 billion, from a total of $25 billion, equivalent to 51%. This does not include net revenue from EGMs in casinos (AGS 2020). In WA, Burswood casino generated net gambling revenue of $533.4 in 2019, of which $265.1 million (47.1%) was contributed by 'main floor machines', constituting the largest segment of gambling revenue (Crown 2019). EGMs are undoubtedly the major contributor to gambling harm in Australia.

81. The PC undertook a study to identify the nature of gambling harms as a component of its 1999 inquiry into Australia's gambling industries.

82. The framework for the PC's assessment of the harms of gambling adopted multiple domains, or areas where it was thought that measurement of harm could be undertaken. These domains were:

    1. Personal, including stress, depression and anxiety, poor health, and suicide;
    2. Financial, including financial hardship, debts, asset losses, bankruptcy, and use of loan sharks;

3. Legal, including crime and imprisonment, as well as bankruptcy and use of loan sharks;
4. Interpersonal, including intimate partner violence, relationship breakdowns, impacts on others and impacts on families, including children;
5. Community, including impacts on charities and the public purse; and
6. Work and study, including job loss, absenteeism, and poor performance (PC 1999: 7.3).

83. The PC used a variety of sources to measure the prevalence of these harm categories, including its own survey of Australians, and information from gamblers in treatment. Amongst those surveyed who were classified as 'problem gamblers', 52.7% reported past year depression, 4.7% contemplation of suicide, and 69.1% reported a desire to stop gambling which they couldn't implement. Amongst 'problem gamblers' seeking help, 13.6% reported ever having attempted suicide.

84. Citing a US study, the PC reported that 'pathological gamblers' had an incidence of poor physical health 2.2 times greater than 'low risk' gamblers. The PC also assessed the proportion of gamblers who experienced the range of harms canvassed in their framework, noting that gambling harms were transmitted between generations (p.7.36), and that impacts on work and study were significant (p. 7.38), that 44.1% of the clients of counselling agencies admitted to criminal activity to fund gambling, and so on. The PC attempted to quantify these harms (as 'costs') in five broad categories – financial, effects on productivity, crime, personal and family, and treatment. This attempt included a costing of the economic value of intangibles such as depression, emotional costs, relationship breakups, etc. The total was reported in a range from $1,800 m to $5,586 m p.a.

85. Subsequent academic research has broadened the PC's approach and produced divergent frameworks and more detailed examination of particular aspects of harm, including discussion of better conceptual models for harm (Latvala et al 2019), examination of the harms accrued by others (Li et al, 2017, Dowling et al 2014), the significant effects of gambling problems on physical health (Morasco et al 2006), the relationship between gambling related debt and suicide (it is clear) (Yip et al 2007), an assessment of the financial and other impacts of gambling on Singaporean families (Matthews and Volberg 2012), and examination of the effects of locally high density of EGMs on intimate partner violence (it significantly increases it) (Markham et al 2016).

86. A Swedish longitudinal study has assessed the rate of suicide mortality in Swedish gamblers classified with gambling disorder as 15.1 times the general rate, with a rate of 19.3 times the population rate for those aged 20-49 years. Suicide was the leading cause of death for the sample of 2,099 people, at 33% of all mortality. All-cause mortality for this group was also elevated by a factor of 1.8 (Karlsson and Hakensson 2018).

87. Bischoff et al, in a study of 442 gamblers classified as disordered using the DSM-IV concluded that 'gambling on EGMs (but not other types of gambling) is related to an increased risk of lifetime suicidal events' (p. 267), at an odds ratio (OR) of 2.85, independently of mood or personality disorders.

88. Cowlishaw and Kessler (2016) report that 'problem gambling' in their UK sample of 7,403 was associated with over-representation in health care settings, including primary care, and were at greater risk of suicidal ideation (odds ratio 4.22), suicide attempts (OR 5.51) and financial difficulties (OR 3.96)(pp. 93-95).

89. Wardle et al (2019) report that 'problem gamblers' report past year suicidality at a rate of 19.2%, at an OR of 5.3, or 2.9 once co-morbid psychological conditions are adjusted for.

90. Muggleton et al, using banking data, calculate that 'High levels of gambling are associated with a likelihood of mortality that is about one-third higher, for both men and women, younger and older' (Muggleton et al 2021, p. 321). These authors also catalogue a range of financial, lifestyle and well-being harms, as well as employment and disability, demonstrating increasingly negative consequences across these as gambling intensity increases (p. 322).

91. Browne et al (2016) report that, in Victoria, the Health Related Quality of Life decrement for high risk gamblers was 0.44, for moderate risk gamblers, 0.29, and for low risk gamblers, .013. Thus, the decrement was, respectively, equivalent to losing 44% of the full enjoyment of life for high risk gamblers, 29% for moderate risk, and 13% for low risk.

92. Browne et al (2017a) also undertook a cost of harm exercise for the state of Victoria, which produced an estimate of $6,973 million in social costs attributable to gambling harm. Total annual expenditure on gambling in Victoria in 2014-15 was $5,800 million, and net taxation revenue to Government $1,600 million (Browne et al 2017a).

93. The estimates produced by Browne et al (2016) located the harms of gambling at about two thirds of the equivalent values for major depressive disorder and alcohol use and dependence, and at over four time the value of type 2 diabetes, five time that of chronic obstructive pulmonary disease, 20 times that of cannabis dependence (Browne 2016, pp136-137).

94. The most harmful forms of gambling have been identified as electronic gambling machines, casino games, and betting, in both terrestrial and online forms. online forms of these also highlighted as exacerbating the likelihood of harm.

95. The PC concluded that

> The prevalence of problem gambling varies by the mode of gambling, with higher prevalence for regular players of gaming machines, racing and casino table games. For example, around one in five weekly gaming machine players have significant problems. The prevalence of problem gambling is much lower among lotteries. (PC 1999: 6.1)

96. Binde (2011) identified strong associations between a high risk of harm and the use of interactive internet games, casino gambling, and EGMs. This article also found that lotteries were relatively harmless, while bingo, horse and sports betting were moderately associated with high risks of harm. This research draws on analysis of 18 mainly European prevalence studies.

97. Castren et al (2018), researching Finnish gamblers, identified gambling on scratch cards, betting, or slot machines as predictors of high risk of gambling harm, along with high frequency of engagement. Mazar et al (2020) using a sample from Massachusetts (USA) report casino gambling as highest risk. Gambling forms engaged in within casinos are not disaggregated, but it is notable that EGMs are common in casinos in most settings. Delfabbro et al (2020), analysing 10 years of prevalence study data from Australian jurisdictions, conclude that regular users of EGMs are most clearly associated with high risk of gambling harm. Mravčík et al (2020) report EGMs, particularly online EGMs, as most closely associated with high risk gambling in a Czech study.

98. Gainsbury et al (2019), in an Australian study, conclude that 'online and land-based EGMs are strongly associated with gambling disorder severity'. These authors further conclude that venue EGMs, sports betting and casino gambling are all significantly implicated in gambling harm. In an earlier study, Gainsbury et al (2015a) concluded that land-based gamblers had a higher proportion of high-risk gamblers than either multi-mode (i.e., both online and terrestrial) gamblers or internet gamblers, with land-based gamblers 'overwhelmingly more likely to attribute problems to EGMs' (p. 39). Overall:

> Land-based gamblers were most likely to nominate EGMs to be associated with gambling problems, while sports and race betting appears to be related to problems for online gamblers (Gainsbury et al, 2015: 40).

99. In a Canadian context, McLaren (2016) reports that users of video lottery terminals (a form of electronic gaming machine widely utilised in Canada) reported higher expenditures with harmful gambling significantly more likely than amongst other forms. McLaren's conclusion was that 'EGM gambling, particularly VLT gambling, has high potential for harm even at modest levels of involvement by frequent players.' (p. 472)

100. Binde et al (2017), in a significant Swedish study, report that

> Among all forms of gambling, EGM gambling stood out in this study as the form most closely associated with PG. This is consistent with results from many other studies which have concluded that EGMs are a high-risk form of gambling (p. 500)

101. Further

> There was a general tendency across all of the forms of gambling, except regular EGM gambling, for participation in each additional form to increase the probability of having a gambling problem (p. 501)

102. Interestingly, this finding was independent of the number of gambling forms engaged in. This study also found that there were fewer than average high-risk gamblers engaged in lotteries and number games. Bischoff et al (2016) identified EGMs as increasing risk of suicide events by an odds ratio of 2.85, independently of mood or personality disorders.

103. Most studies discussed above also referred to gambling frequency and involvement (i.e., the number of different gambling forms engaged in) as predictors of gambling harm. However, Binde et al (2017) concluded that in their large sample, high risk gamblers typically utilised between 2.1 and 2.5 products (drawn from a number of studies). Most gamblers using EGMs were experiencing most harm from that form. In 1999, the Australian Productivity Commission estimated that the overall share of gambling expenditure attributable to those they termed 'problem gamblers' was 33%. However, the share of revenue attributable to this category of user was variable depending on the mode of gambling. For example, those in this category using EGMs accounted for over 42% of revenue, whereas those using lottery products accounted for 5.7%. The equivalent proportions for scratch card users and wagering users were 19.1% and 33.1%, respectively (PC, 1999 p.7.46).

104. The capacity of a gambling form to inflict harm is related to its structural characteristics. More purposively, the characteristics of gambling forms are intended to make gambling attractive and encourage continued participation, and in some cases addiction. As Schüll expresses it, in the context of EGMs, structural characteristics facilitate time on device (TOD) and to maximise revenue per available customer (REVPAC)(Schüll 2012). Structural characteristics vary between gambling forms, and have evolved rapidly in

relation to automated forms of gambling (e.g., egms, online casino games, automated bingo machines).

105. As noted above some forms of gambling are more likely than others to bring about addictive behaviour, and accordingly increased harm. Addiction models suggest that stimulation of the brain's reward centres provide the basis for this form of addiction. Earlier models identified forms of conditioning (classical and operant conditioning) which provided a basis for observing specific characteristics of games that were associated with addiction.

106. The advent of functional MRA imaging and other developments has now led to identification of a dopamine model to account for addiction. In this model, reward stimuli lead to increased flows of dopamine and other pleasurable neurochemicals that provide relief from stressful or unpleasant life circumstances, and re-form some neural connections (Yücel et al 2018).

107. Operant conditioning is a concept that relates to the provision of irregular or random rewards or prizes, or as Skinner puts it, a schedule of reinforcement (Skinner 1953). Reinforcement is simply a stimulus that induces a response in the subject of the stimulus. Just as dogs will learn to obey particular commands when rewarded, humans and other animals will learn to continually undertake specific activities when *intermittently* rewarded. Animals, including humans, are more likely to develop habitual behaviour when exposed to an unpredictable series of rewards under specific conditions.

108. Classical conditioning relates to another addictive mechanism, whereby animals (including humans) will come to associate specific rewards or pleasurable events with auditory or visual stimuli, or odours, sensations, or colours. Thus, Pavlov's experiments with dogs (Pavlov 1927) demonstrated that a dog who was fed whilst a metronome was operated would associate the metronome with being fed, and salivate in response, even if food was not provided. Humans are similarly susceptible to such stimuli.

109. These forms of stimuli can be readily observed in EGMs, where the combination of a high speed of operation, relatively high stake size, carefully signalled random reward events, and multiple visual and auditory stimuli, produce apparent high engagement and apparently high rates of addictive behaviour. The consequence of this, of course, is significant harm (Livingstone 2017).

110. EGMs, being computerised, allow for endless modification and redesign to provide multiple streams of stimuli. For example, EGMs may offer multi line betting, whereby a low denomination bet may be scaled up dramatically, in some cases by a factor of 50 or more. Multi line EGMs also permit what are referred to as 'losses disguised as wins', whereby a bet on one line may win a prize, but the overall effect is a net loss. Such events are rewarded with celebratory sounds and visual stimuli, although the gambler has indeed lost most of their stake. This function may increase the rate of reinforcement by as much as double, thereby providing significant additional reinforcement at no cost to the operator (Harrigan et al 2014).

111. Similarly, near misses (where it may appear that a 'win' was narrowly missed by the location of symbols on a reel) provide stimulus that may also add significantly to the reinforcement rate (Harrigan 2008).

112. The effect of event frequency is also significant. EGMs allow for an almost continuous flow of bets, often at intervals of as little as two or three seconds. They may also permit

high bets and thus significant expenditure. For example, at a maximum of $10 per bet, an Australian-style EGM can readily consume an *average* of $1,200 per hour, and potentially significantly more.

113. EGMs thus provide a prototype of the 'idealised' gambling form. Increasingly, other forms of gambling are adopting the characteristics of these devices in order to pursue the goals of maximising revenue and maintaining continuing engagement with the gambling form.

If you consider that:

> (e)   *the use of modern poker machines is harmful or potentially harmful to patrons making use of those machines; and*

> (f)   *the EGMs shown in the video file and YouTube videos referred to in question 3 <u>are</u> poker machines,*

> *then please indicate whether any (and, if so, what and why) aspect of the game play shown in those videos might mean that the machines would be less (or more) harmful or potentially harmful than poker machines in other Australian States. Alternatively, if you consider that the machines would be equally harmful or potentially harmful then please say so.*

114. I consider that the use of contemporary EGMs is harmful or potentially harmful to many people who use them, most notably those who use them regularly. The characteristics of gambling games that make them more or less likely to be harmful can be summarised as follows:

1. **Event frequency** – (EF) (i.e., speed at which bets can be placed). High EF forms will permit bets at intervals of seconds and will most likely be digitised. Moderate EF forms will allow wagers every few minutes. Low EF will permit wagers to be placed at intervals of several hours to a day. Very low EF forms (e.g., lotteries) will have days or in some cases weeks between events on which wagers can be placed.

2. **Structural characteristics** – event frequency, multiple bet capacity, and bet size are important structural characteristics, but some gambling forms have additional characteristics that raise concerns via increasing rate of betting and level of reinforcement. These include capacity to bet on multiple wagers within a single game, ability to increase rate of betting, losses disguised as wins (LDWs), 'near misses', audio-visual effects, and illusion of control.

3. **Stakes** – (i.e., the amount that may be bet on each wager). Low stakes games will have modest limits placed on wagers (e.g., up to $1.00). High stakes games will have limited wagers up to significant sums (e.g. up to $10.00). Very high stakes games will be unlimited.

4. **Average expenditure** – the amount lost by those who use that game form. Games with high average expenditure are likely to be characterised by high reinforcement rates and high EF.

5. **Multi-bets** – the ability to place more than one wager on a specific event simultaneously or concurrently, as in casino table games such as roulette, or on some EGMs.

6. **Accessibility** – (i.e., the ability to get access to a specific gambling form). An example of assessment of accessibility might be a proposal to open a large new casino in a

population centre. Increased accessibility to a range of high impact gambling forms may be a serious harbinger of increased harm.

115. As noted above, the EGMs shown in the video file and in the YouTube videos are essentially Australian style EGMs (i.e., 'poker machines') most notably that shown in the video file, and YouTube videos (b), (d) and (e).

116. The characteristics of the games shown in the video file and in the YouTube videos are similar if not identical to those displayed by Australian style EGMs in other jurisdictions. Until 2019, speed of operation was slightly slower but since that time it is now a minimum of three seconds, consistent with speed of operation in other Australian Jurisdictions. Note also that the post 2019 policy and WA appendix will increase the similarity of WA EGMs to those available in other Australian jurisdictions, and allow for increased betting configurations, etc.

117. Note that the maximum bet on casino EGMs in WA is $10, now twice that permitted in Victoria, Queensland, South Australia, and Tasmania. This increases the harm potential of these games compared to games available in those states in clubs and hotels.

118. The fact that EGMs are limited to a single casino in Perth reduces accessibility compared to other jurisdictions where EGMs are ubiquitously available in club and hotel venues. However, this is offset to some degree by the 'honey pot' effect of a large venue in a capital city, accessible to metropolitan residents and with a large catchment. It is clear that large EGM venues are the most dnagerous, in terms of gambling harm (Young et al 2012).

119. All games shown in the video file and in the YouTube videos provide reinforcements at high event frequency, and offer structural characteristics such as those outlined above. The stakes available are relatively high and can be increased readily between games. Changes in the betting strategy may contribute to illusion of control.

120. Accordingly I believe the games shown in the video file and in the YouTube videos are at least as harmful as Australian style EGMs available in other Australian jurisdictions (known in the vernacular as 'poker machines' or' pokies'.

If you consider the use of modern poker machines (or EGMs) to be harmful or potentially harmful to patrons making use of those machines, then please explain what conditions, restrictions, or requirements you suggest might adequately address that risk of harm.

121. Multiple reform options are available to prevent or minimise the harm produced by EGM and other forms of gambling. Many have now been implemented in international and some Australian jurisdictions. The following are likely to be helpful in this regard:

1) Expand the remit of Healthway, the Western Australian Health Promotion Foundation, to develop effective, public health derived interventions to prevent and minimise gambling harm, including legislating a role with the regulator in the iterative revision of gambling harm prevention and minimisation codes for adoption by all gambling operators, most urgently the Perth casino, in place of existing 'responsible gambling codes of conduct';
2) Establishment of a cashless gambling system for all EGMs and casino table games, linked to universal use of a pre-commitment system, with the requirement that all gamblers set a limit of money and time on their gambling activity, and that gamblers establish an

account into which monies for gambling are to be deposited by direct deposit, and into which any winnings are paid;

3) The cashless gambling system must not be linked to the Crown loyalty system, which should be discontinued, consistent with prohibition on the use of incentives to gamble;

4) Establishment of an effective self-exclusion program based on the cashless gambling system;

5) Establishment of a duty for the casino operator to ensure that it uses data analysis to ascertain those at risk of gambling harm, and take active steps (including suspending accounts where indicated) to prevent harm, or to minimise its effects;

6) Establishment of powers and an adequate level of resourcing for the regulator to provide it with the capacity to undertake active investigations into how harm prevention and minimisation is actually undertaken, and to ensure that where responsibilities are not undertaken, adequate enforcement action is taken, including suspension or cancellation of licence;

7) Improved transparency in collection and reporting of data relating to gambling harm minimisation, including interventions undertaken, and their consequences, together with regular evaluation of the effectiveness of these, using a data driven approach;

8) Provision of access by gambling researchers to de-identified data to facilitate improved understanding of gambling activity, patterns and expenditures;

9) Prohibitions on gambling operators engaging former political staff until a reasonable period of time after their retirement from Parliament or active political employment (e.g., as political staff or party officers);

10) Prohibition on the use of pre-commitment data for any commercial purpose;

11) A requirement for gambling operators to ascertain the source of funds used for gambling upon detection of patterns of harmful gambling activity, with the consequence of suspension of a gambling account until such evidence can be produced;

12) Prohibition of certain EGM characteristics, including losses disguised as wins, and 'near misses', along with a reduction in maximum bet and reduction in speed of play;

13) Reform of the relevant legislation and regulation to replace the concept of 'responsible gambling' and the 'problem gambler' with the concepts of 'harm prevention and minimisation', and 'gambling harm', respectively, and with these clearly defined in legislation.

122. In concluding I believe that the prohibition on 'poker machines' in WA arose from the perception that spinning reel gambling machines were likely to be inherently more harmful than casino style games, or games lacking a spinning reel. This may or may not be correct. However, the evolution of EGMs has been rapid and EGMs do not require the illusion of spinning reels to be as potentially harmful as those with that characteristic.

123. As noted above, in my opinion EGMs currently operating in the Perth casino are at least as harmful as those operated in other Australian jurisdictions, and possess the same features and characteristics. All EGMs operating in other Australian jurisdictions are referred to in the vernacular as 'pokies' or 'poker machines'.

124. I do not believe that there is any basis to distinguish between types of EGM operated in WA and those operated in the rest of Australia, having regard to their underlying operation, their fundamental characteristics, or their capacity to cause addiction or harm.

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