

PANArt's Free Integral Hang: Daydreams Before Profits

A Case Study on Managing Creativity by Rupert Cocks (1)

September 2012

“Sophisticated play with the hands leads to the purpose: a daydream from which one emerges invigorated.”

Hang makers Felix Rohner and Sabina Schärer (2)

“Daydreams are good for us in all sorts of ways, just as real dreaming is. It refreshes us mentally and emotionally, freeing the mind, if only temporarily, from the concerns of the moment.”

Gordon Torr (3)

“In our modern age, in which music is seen almost exclusively as an aesthetic experience, as another performing art, it is useful to remind ourselves that it once meant something much deeper, much more personal, much more vital. And it still can today, although we need to relearn its relevance to our lives.”

Ted Gioia (4)

Part one

The Free Integral Hang might be a musical instrument. (5) It might also be a metal sculpture. (6) Or it might be a tool to allow a lucky few to explore their own creativity. (7) Or it could be a gateway to refreshing daydreams. (8) It might even have therapeutic qualities. (9) Whatever it is, the Free Hang is certainly not a conventional product that can be bought by anyone with a credit card. (10)

Felix Rohner and Sabina Schärer introduced the Integral Hang in February 2008. Like many of their previous inventions, it was an innovative steel instrument that had evolved from steel drums. It had two domed halves, sits in the lap and is played with the hands. The instrument was hollow and the steel resonates in subtle and interesting ways. (11) In November 2009, they introduced the Free Integral Hang, which took their work a step further by offering free tuning. This means that they no longer build the instruments with the help of a tuning device. In other words, each Hang has its own individual sound based on the intuition of the makers rather than mathematical formulas. (12)

With the Integral Hang and later the Free Integral Hang, Rohner and Schärer decided to stop offering bespoke instruments or different models tuned to different scales. The Hang-makers were concerned that people who had seen earlier versions of the Hang on the laps of street musicians or on the internet would be frustrated by the new instrument. The new instruments were not designed to be used by buskers or by members of bands. Instead, they said in a

newsletter in May 2010 that “direct contact with our highly sensitive resonance bodies requires a high degree of inner freedom.” They added that playing the Free Integral Hang can evoke invigorating daydreams. (13)

In May 2011, Rohner and Schärer expanded on this point in an open letter: “The Hang means an opportunity to rediscover the music behind the music, to linger at the source of creativity and to acknowledge that there are places where we do not have to produce, master or manifest anything, where we don’t have to be good at something.” In the same letter, the Hang-makers, whose company is called PANArt, said that use of the Free Hang “demands thoughtful and responsible use.” They also said that although they were skeptical of how the Hang might be used in the world of therapy, they would pay close attention to this field. So far, though, they noted that the evidence was anecdotal. (14)

How can one sell a source of refreshing daydreams to responsible people with inner freedom?

The Hang-makers had been dissatisfied with their earlier attempts to set up a distribution network. They had sold 4,300 Hanghang (the plural of Hang) by the end of 2005, but exploding demand meant that they were facing “a frantic work schedule and didn’t allow them enough free space and time to experiment and explore possibilities for the advancement of the Hang,” in the words of Michael Paschko, who runs the main Hang blog. He says that the Hang makers decided to give up their international dealer network and their website with the introduction of the second-generation Hang in 2006. In August 2007, they shut down their email address, requiring people to write a letter. With the launch of the Free Integral Hang in 2009, they decided to invite a handful of those who write them letters to visit them in Bern in Switzerland. Most potential clients would be unsuccessful. Personal recommendations would be taken into account. (15)

In their 2009 newsletter, Rohner and Schärer also said that they had decided to “exercise more caution” about how they described the new instrument, adding that some people who had mistaken earlier Hanghang for drums had experienced “physical injury and mental and emotional turbulence.” (16) As a result of these concerns, PANArt would no longer shipping the Free Integral Hang. Anyone lucky enough to be chosen to buy one would have to travel to PANArt’s workshop in Bern to choose their instrument. (17) The price (currently 2,400 Swiss Francs per Hang) would be fixed. (18) Since 2008, buyers of the Hanghang have had to sign an agreement restricting them from making a profit by re-selling the instrument. This was to cut off the second-hand market, which had exploded for previous models of the Hang in 2007. (19)

Interestingly, many of the people who successfully apply to buy a Hang are not musicians. Paschko said that one of the qualities that PANArt looks for is people “who they think understand the new properties of the current Free Integral Hang and its differences to former versions of the Hang.” (20) On his website, Paschko said that some potential clients have reacted “with irritation, and are disconcerted or angered” by the lack of a waiting list. “They fear that there is no chance to find a Hang of their own and may think that the Hang makers from PANArt are elitist.” However, he said that this idea is far from the truth. (21)

In May 2010, Rohner and Schärer explained their underlying sales philosophy: “...PANArt does not consider itself to be a business which wants to grow and maximize profits.” (22) In an

email to the author, Rohner said that he considers PANArt to be a community business, adding that he is not interested in publicity. "Business is not our main thing. We create Hang sculptures every day as a practice and research." He declined to collaborate further. (23) Paschko explains further: "PANArt is a serious business, but not a business with a capitalistic approach. The target of the PANArt tuners is to practice their art and develop the Hang, not to satisfy a demand or to maximize the profit. The Hanghang are sold so the company has of course an income. Hang making is not a hobby." (24)

Paschko says that PANArt makes less than 400 Hanghang per year. He said that demand is much higher than supply. "So it is impossible to sell the Hang to anyone who wants. PANArt is forced to choose a minority who can get a Hang. If PANArt would choose them by waiting list position, by lottery or by raising the price to an amount that demand and production is balanced, many of the buyers would be dissatisfied with the Free Hang while the majority of those who would be satisfied by playing a Free Hang had no chance to buy one."

The Free Integral Hang is the latest evolution in a long line of innovative instruments, with roots going back to 1976 when Rohner began to build steelpans and founded the first steel band in Switzerland, Paschko said. Rohner became a professional steelpan tuner and founded PANArt in 1993 to support the growing community of roughly 200 steel bands in Switzerland. In 1995, Schärer joined PANArt as a tuner, Paschko said. Schärer had played in steel bands since her teens and been a member of the band that Rohner had founded.

The first turning point also came in 1995, Paschko says. The other members of PANArt left to build steelpans in the traditional way, while Rohner and Schärer developed a new domed instrument based on a new material, involving prefabricated, deep-drawn steel sheets, which were hardened in a kiln in a process called gas nitriding. Through the 1990s, Rohner and Schärer experimented with gongs, cymbals and bells that they called Pang, Paschko said. By 2000, they had developed the first Hang, the youngest Pang instrument, which could be played with the hands.

Andrew Morrison and Thomas D. Rossing said that Hang means hand in the Bernese dialect of German. They added that the inspiration came when a percussionist looking for new sounds visited PANArt. "The builders realized they could put two pan-like shells together to create a steel instrument that could be held in a musician's lap and played by hand." (25) In his history of the Hang, Paschko said that the idea came as Rohner and Schärer explored ways to merge the traditional Trinidadian steelpan with the Indian ghatam, an earthenware pot that is used as a percussion instrument in classical Indian music. (26) After presenting the Hang at a conference on steelpans in Trinidad in 2000, Paschko said that the Hang makers realized that their latest invention no longer belonged in the world of steelpans and steel bands. "It was a new path." (27)

As part of the new path, Rohner and Schärer set aside the winter season each year as their Hangruhe, a quiet regenerative time for research and development. (28) It was in one of these periods that they developed the Free Integral Hang. The instrument makers have also told would-be buyers that they cannot receive unannounced visits. (29)

In an explanation of why the Hang is so innovative, Morrison and Rossing say: “The waves created when the Hang is struck are not confined to a single note area. Rather, they initially propagate outward through the steel of the instrument and are eventually reflected many times off the Hang’s boundaries. If any other notes have resonances at frequencies near those in the spectrum of the struck note, as is often the case, then modes of the other notes will be excited and the Hang will vibrate at the corresponding frequencies.” The authors also said that the Hang offers “a wealth of interesting physics that makes for rich acoustical study.” (30)

Meanwhile, Morrison and Rossing, this time with D. Wessel, say that PANArt started working on the second-generation Hang to satisfy requests for deeper sounds. They add that the length of time that the fingers touch the instrument is of utmost importance. (31) Paschko said that when someone plays the Hang, the whole instrument sounds at the same time. “The emission of the sound is not isolated to the played tone field. Through a number of physical effects modes in other tone fields oscillate together and the sound radiation cannot be localized.” He added that the Hang makers realized that some scales worked better than others. It was for this reason that they gradually reduced the number of scales available until they had the “insight” that scales were actually not that important for the instrument. Rohner and Schärer therefore decided to concentrate on only one scale in order to enhance their tuning skills, later working without a tuning device. (32)

In the words of Rohner and Schärer themselves, from their 2011 newsletter: “The vessel sounds without requiring a playing technique. Like a seismograph, it answers the softest touch, it amplifies the most subtle gesture of the hand and fingers, it touches the innermost of humans. A mirror. More than a mirror. An instrument to get into the mood of a free flow. A tuning instrument. Harmonization through absorbing that which flows from the hands. Time independence. There is no need for an audience, a stage, microphones, loudspeakers. It is not intended as a platform for the art of percussion, and composers will not come across any tonal system that would produce a satisfying result.” (33)

In the same newsletter, the Hang makers describe a number of problems that might arise if the Free Integral Hang were to fall into the wrong hands. “Careless use may even lead to confusion: the space that a Hang can create is misunderstood if the released emotions are reduced and credited to the ego. A creeping addiction may arise.” Rohner and Schärer also said that drummers can develop unhealthy habits on the new instrument. They said that it is misunderstood by people who wear gloves to play it and by people who use mallets. By playing the instrument gently with their fingers, owners no longer have to take them back to Bern to be re-tuned.

Scarcity in the market has led to other designers stepping in to make instruments inspired by the Hang. For example, Pantheon Steel started researching the Halo – their version of a resonant steel instrument played by hand in the lap – in 2009. Pantheon Steel says on its website: “While unique in its specifics, the Halo was inspired by a revolutionary and evolutionary twenty-first century sound sculpture invented in Switzerland, which may be familiar to many of our customers. We originally used this space to express personal gratitude to that sculpture’s creators, but they asked that we not mention it by name.” (34)

The makers of the Halo, Kyle Cox and Jim Dusin, said that they believe the instrument belongs to a new art form, which they call handpans. Rather than copying the Hang, they said that they “developed our own custom processes and materials in pursuit of a creation with a new voice.” They also said they hope that they have “created a worthy companion to *the* musical innovation of the century.” To buy a Halo, which is made in the United States, potential customers must win one of Pantheon Steel’s regular lotteries. The company also auctions one instrument per month on Ebay, usually with unique tunings.

Other competitors include the Zen Tambour, designed by Steve “Spike” Finch. This is a drum that is played in the lap with the fingers. It is customizable. He said that he was inspired by the Tank Drum invented by Dennis Havlena. (35) On his website, Havlena said that his Tank Drum was inspired by the “essentially unobtainable” Swiss Hang. He completed his first one in 2007 and has put instructions on making home-made instruments on his website. He describes his Tank Drum as a “rough and ready” propane tank conversion and strongly recommends both the Halo and the Zen Tambour for people who cannot make their own instruments. (36) Other instrument makers around the world are also experimenting with similar designs. (37) In 2009, the Hang makers said that they were “not unhappy” about the creation of other Hang-like instruments. They said that the existence of different instruments would lead to a debate about “the quality aspects of those resonance bodies which only work if they are created with dedication.” (38)

With no deviation from the new path in sight, Rohner and Schärer offer a final glimpse into what awaits the lucky few who are invited to travel to Bern to choose an instrument. In a booklet for owners of Free Integral Hanghang, published in 2010, they say: “Should you try to fulfill musical forms you will quickly encounter limitations. The Free Integral Hang is meant to propagate the finest vibrations from the depths of the soul.” (39)

Part two

PANArt’s way of working might seem strange from the point of view of conventional businesses, with one exception. Clearly controlled scarcity of a product can add value. For example, Josh Kaufman says that scarcity “naturally overcomes our tendency to conserve – if you want something that’s scarce, you can’t afford to wait without the risk of losing what you want.” (40) Meanwhile, psychologist Stephen Worchel found that “cookies taken from a jar that is almost empty taste significantly better than identical cookies taken from a full jar.” (41) However, PANArt make little or no attempt to exploit the scarcity of the Hanghang. Unlike the makers of the Halo, they do not hold regular auctions of limited-edition instruments. As we saw earlier, Pashko also says that they are reluctant to increase prices to a point where supply and demand are balanced. Indeed, Rohner goes so far as to say that he doesn’t want any further publicity.

If we leave aside the conventional view of business, we can see intriguing parallels between PANArt and other people that put creativity at the heart of their projects. For example, take the Hangruhe, the Hang makers’ quiet time for regeneration and research. This is similar to practices developed by innovative Spanish chef Ferran Adrià. In a case study, Marcel Planellas

and Silviya Svejenova said that the Catalan chef consistently closed elBulli, his award-winning restaurant on the Costa Brava, for up to six months so that he could create new and original dishes away from the pressure of serving customers every day. (42)

Take the perception of elitism among some would-be clients of PANArt. Gordon Torr says that truly creative people in advertising rarely come across as “warm and cuddly.” However, he said that he eventually came to realize that a certain surface hostility was not to protect delicate egos. “Ideas are fragile, and it’s ideas that need protection. Creative people nursing ideas are like animals nursing their young, and there’s hardly anything quite as vicious.” (43)

Take the idea of refusing to sell to the wrong people. Ted Gioia tells of drum-makers in traditional societies who will not sell certain mystically powerful instruments. (44) Take also the mysticism of Rohner and Schärer, with their talk of vibrating souls. The link between music and mysticism springs from a long tradition. Victor Zuckerkandl discusses the “transcendence” of music, something which “occurs nowhere else in the same way, with the same directness.” (45) Even away from the world of music, we can see something similar at work. For example, the poet Mark Strand was quoted by psychologist Mihaly Csikszentmihalyi as saying: “Well when you’re right in the work, you lose your sense of time, you’re completely enraptured, you’re completely caught up in what you’re doing, and you’re sort of swayed by the possibilities you see in this work.” (46)

The one element that links these people from diverse areas is the idea that creativity must be protected at all costs, even if it means forgetting about the ordinary concerns of growth and profit margins. Creativity, or originality, can be defined in many ways. For the purposes of this case study, we will use Margaret A. Boden’s elegant definition: “Creativity is the ability to come up with ideas and artefacts that are *new, surprising and valuable*.” (47)

It is clear that the Hang and the Free Integral Hang are artefacts that meet all three of Boden’s criteria. The Hang was *new* in 2000 and the Free Integral Hang was also a breakthrough on the theme. Both are *surprising*, as can be seen by Morrison and Rossing’s view that the Hang has the potential for “rich acoustical study.” (48) The explosion of the second-hand market, mentioned above, is testament to the fact that the instruments are *valuable*.

Boden also develops her basic definition of creativity into three different levels: unfamiliar combinations of familiar ideas; exploring conceptual spaces; and transforming these spaces. (49) We can see all three levels in the brief history of PANArt given above. Rohner began by exploring the possibilities of steelpans. He was later joined by Schärer in this project. After discovering a new material, they began a long period of combinatory experimentation and exploration. The creation of the Hang was based on the combination of the new material with an instrument inspired by steelpans and ghatams. The Hang makers realized in retrospect that the result of this experiment had been transformative. Over the following years, Rohner and Schärer again entered an exploratory phase as they mapped out the territory opened up by the discovery of the new instrument. Further transformations led to the creation of the Free Integral Hang, which stripped away elements that they saw as unsatisfactory.

In a study on creativity in the film industry, Peter Bloore says that exploratory creativity often refers to crafts, while transformational creativity aligns with arts. He argues that not all artists

are craftsmen, just as not all craftsmen are artists. However, he notes that there is an area of overlap in masters of their craft who are “viewed as akin to artists.” (50) Boden also referred to a similar phenomenon when she said that creativity often demands expert knowledge, which needs to be combined with “everyday psychological abilities, such as noticing, remembering and recognizing.” (51) In another work, Boden said that there is no “hard and fast” line between arts and crafts, although their aims can be somewhat different. Instrument-making in general would seem to have the characteristics of a craft – ancient roots, useful objects – but PANArt’s aims seem closer to artists who seek “to remind, to affirm, to question, to stimulate – even to challenge.” (52)

Rohner’s 17 years building steelpans before founding PANArt no doubt qualifies him as a master of his craft with deep expert knowledge. It is interesting to note that he and Schärer invented the Free Integral Hang ten years after developing their first Hang and 15 years after the discovery of their new material. Even using conservative estimates, it is clear that the senior partner has logged more than 10,000 hours of practice tuning conventional steelpans. Both Rohner and Schärer are likely to have passed this level for designing instruments using gas nitriding technology.

Research from psychologist K. Anders Ericsson and colleagues at the Academy of Music in the 1990s showed that elite violinists and professional pianists needed to log 10,000 hours of practice in order to attain such a high level of proficiency, according to Malcolm Gladwell. The same author also cites a neurologist, Daniel Levitin, who found that “study after study” brings up the figure of 10,000 hours of practice in order to achieve “true mastery” in many different domains. (53)

In order to deepen our understanding of originality, we need to turn our attention now to the motivation of truly creative people. Creativity expert Teresa Amabile says that her research shows that “when people are primarily motivated to do some creative activity by their own interest in and enjoyment of that activity, they may be more creative than they are when primarily motivated by some goal imposed on them by others.” (54) The idea also appears in the work of other authors. Csikszentmihalyi describes “autotelic experiences.” Auto derives from self and telos means goal. “It refers to a self-contained activity, one that is done not with the expectation of some future benefit, but simply because the doing itself is the reward.” (55)

Amabile also discusses the best way of nurturing creative activity in an article with Constance N. Hadley and Steven J. Kramer: “Avoid extreme time pressure whenever possible, particularly if you are looking for high levels of learning, exploration, idea generation, and experimentation with new concepts.” (56)

Returning to PANArt, we can see a deep commitment to what Amabile calls intrinsic motivation without time pressure: “We create Hang sculptures every day as a practice and research,” Rohner said in words quoted earlier. Paschko also said that the main objective for Rohner and Schärer “is to practice their art and develop the Hang.” He said that the Hang makers developed their unconventional sales methodology to remove time pressure from their work.

It is interesting to note that Rohner and Schärer only want to sell to people who are strongly intrinsically motivated themselves. Restricting the Free Integral Hang to one scale that is tuned intuitively means that the new instrument is no longer optimal for buskers or members of bands. As the Hang makers said: “There is no need for an audience, a stage, microphones, loudspeakers. It is not intended as a platform for the art of percussion, and composers will not come across any tonal system that would produce a satisfying result.” Instead, Rohner and Schärer want their customers to explore healing daydreams; “to rediscover the music behind the music;” and to play without musical forms in a free way.

Unfortunately, musical freedom is difficult to define. Improvisation expert Derek Bailey says: “Opinions about free music are plentiful and differ widely. They range from the view that free playing is the simplest thing in the world requiring no explanation, to the view that it is complicated beyond discussion. There are those for whom it is an activity requiring no instrumental skill, no musical ability and no musical knowledge of any kind, and others who believe it can only be reached by employing a highly sophisticated, personal technique of virtuosic dimensions. Some are attracted to it by its possibilities for musical togetherness, others by its possibilities for individual expression. There is, as far as I know, no general view to be given.” (57)

Despite this lack of consensus, Rohner and Schärer’s invention seems to tip the balance towards simplicity and lack of musical background by making instruments designed for free exploration. We can see an interesting parallel in the early history of photography. Lawrence Lessig says that the early Kodak camera and film changed the barrier to expression implicit in earlier art forms: “The pencil or paintbrush was also a technology of expression, of course. But it took years of training before they could be deployed by amateurs in any useful or effective way. With the Kodak, expression was possible much sooner and more simply. The barrier to expression was lowered. Snobs would sneer at its ‘quality;’ professionals would discount it as irrelevant. But watch a child study how best to frame a picture and you get a sense of the experience of creativity that the Kodak enabled. Democratic tools gave ordinary people a way to express themselves more easily than any tools could have before.” (58)

We can get further clues about what free play means from the work of Csikszentmihalyi. The psychologist discussed how a sense of flow can emerge in challenging activities that require skill. Flow is defined by the merging of action and awareness in activities with clear goals and immediate feedback. In these moments, we concentrate on the task at hand and lose any sense of worrying about control. We lose our self-consciousness and time is transformed. Finally the activity becomes intrinsically rewarding. (59) In another work, Csikszentmihalyi says that “it is easy to recognize the conditions of flow” in the accounts of those highly creative people that he interviewed. (60) Meanwhile, Boden noted that creativity often “has much in common with play,” particularly open-ended play. (61) Rohner and Schärer clearly want to encourage this sense of flowing playfulness. They say the Free Integral Hang can produce “the mood of a free flow,” for example.

We have seen how the academic study of creativity can throw light on many of the decisions made by PANArt, particularly those which might seem unconventional from a business point of view. But what could the Hang makers themselves learn from this field about how to identify

people with the right attitude? Choosing intrinsically motivated clients who are interested in flow-like exploration of the instrument for its own sake must be a difficult task. Companies that need to hire highly creative people face a similar dilemma. Torr offers some straightforward advice for people in these circumstances: “1. Hire the best talent you can afford. 2. Let them get on with it.” He also warns against over-analysis. Earlier in the same book, Torr provided one useful tip for recognizing truly creative people: “Highly creative people are compelled to do what they do because doing anything else makes them miserable, neurotic, psychotic, suicidal or all of the above. More than anything else, that is the mark of the creative beast.” (62)

Research also shows that highly creative people often have other defining characteristics. Csikszentmihalyi found that they often have “a good dose of curiosity, wonder, and interest in what things are like and in how they work,” as well as openness to experience and a fluid attention. The author later says: “If I had to express in one word what makes their personalities different from others, it would be *complexity*. By this I mean that they show tendencies of thought and action that in most people are segregated. They contain contradictory extremes – instead of being an ‘individual,’ each of them is a ‘multitude.’ Like the color white that includes all the hues in the spectrum, they tend to bring together the entire range of human possibilities within themselves.” (63)

Curiously, these characteristics also show up in other fields. Al Siebert found that survivors of life’s catastrophes could also be contradictory. “They are serious and humorous, hardworking and lazy, self-confident and self-critical. They are not one way or the other, they are both one way and the other.” (64) Perhaps the potential to be creative and to survive belong to a wider category of flexible thinking. It would be an interesting topic of research to see whether or not this is the case. If so, researchers might want to look into the evolutionary examples of flexible thinking as a way of over-riding the brain’s default settings. It would also be interesting to see more research on how flexible thinking could be nurtured in the young.

Another interesting area for more research, as Rohner and Schärer themselves noted, would be into the use of music in therapy. However, Gioia points out that this can be a frustrating area. “Although many books have been written about musical healing, most serve the ends of advocacy and self-promotion, and only a few have even begun the task of sifting through this apparent treasure, separating the ingots of value from the larger mass of fool’s gold.” (65) Further studies would be more than welcome.

Footnotes to Part One

- (1) The original project was submitted as a project on Managing Creativity as part of an MA course at Bournemouth University’s Centre for Excellence in Media Practice (CEMP). This version has been reworked slightly for publication in the online Hang Library. <http://www.hangblog.org/panarts-free-integral-hang-daydreams-before-profits/>
- (2) PANArt Newsletter, 19 May 2010 <http://www.hangblog.org/newsletter-panart-may-19th-2010/>

- (3) Torr, Gordon (2008), p245
- (4) Gioia, Ted (2006), P15
- (5) Felix Rohner and Sabina Schärer use different ways to describe the Hang. For example, they describe it as an instrument in *The Call of Iron*, 10 May 2011
<http://www.hangblog.org/the-call-of-iron/#english>
- (6) Felix Rohner describes the Hang as a sculpture in an email to the author on 24 May 2012
- (7) *The Call of Iron*, 10 May 2011 <http://www.hangblog.org/the-call-of-iron/>
- (8) *PANArt Newsletter*, 19 May 2010 <http://www.hangblog.org/newsletter-panart-may-19th-2010/>
- (9) *The Call of Iron*, 10 May 2011 <http://www.hangblog.org/the-call-of-iron/>
- (10) *How do I acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (11) For a basic introduction to the Hang, please see Morrison A., Rossing T.D. (2009, p66)
- (12) Emails from Michael Paschko, 3 September 2012 and 17 September 2012
- (13) *PANArt Newsletter*, 19 May 2010 <http://www.hangblog.org/newsletter-panart-may-19th-2010/>
- (14) *The Call of Iron*, 10 May 2011 <http://www.hangblog.org/the-call-of-iron/>
- (15) Email from Michael Paschko, 2 June 2012, with additional information from an email from Michael Paschko, 3 September 2012
- (16) *Letter from the Hangbauhaus*, 21 November 2009 <http://www.hangblog.org/letter-from-the-hangbauhaus-november-2009/>
- (17) *How do I acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (18) Email from Michael Paschko, 2 June 2012
- (19) *How do I Acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (20) Email from Michael Paschko, 2 June 2012
- (21) *How do I Acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (22) *PANArt Newsletter*, 19 May 2010 <http://www.hangblog.org/newsletter-panart-may-19th-2010/>

- (23) Email from Felix Rohner, 24 May 2012
- (24) Email from Michael Paschko, 2 June 2012. The following history of the Hang is based on the same email
- (25) Morrison, Andrew and Rossing, Thomas D. (2009), p66
- (26) *How do I Acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (27) Email from Michael Paschko, 2 June 2012
- (28) *How do I Acquire a Hang*, Michael Paschko, 21 November 2009
<http://www.hangblog.org/2006/11/27/how-to-buy-a-hang/>
- (29) *The Call of Iron*, 10 May 2011 <http://www.hangblog.org/the-call-of-iron/>
- (30) Morrison, Andrew and Rossing, Thomas D (2009, p66)
- (31) Wessel D., Morrison A. and Rossing T.D (2008, p3 and p6)
- (32) Emails from Michael Paschko, 13 June 2012 and 17 September 2012
- (33) *The Call of Iron*, 10 May 2011 <http://www.hangblog.org/the-call-of-iron/>
- (34) Pantheon Steel website: <http://www.pantheonsteel.com/>
- (35) Zen Tambour website: <http://exoticvessels.com/zentambour/>
- (36) Dennis Havlena's website: <http://dennishavlena.com/>
- (37) See for example Tankdrums: <http://www.tankdrum.com/>
- (38) *The Integral Hang 2009*, Felix Rohner and Sabina Schärer, 1 June 2009
<http://www.hangblog.org/the-integral-hang-2009/>
- (39) *Hang Guide*, Felix Rohner and Sabina Schärer, April 2010, p12
<http://www.hangblog.org/hang-guide/>

Footnotes to Part Two

- (40) Kaufman, Josh (2010, p224)
- (41) Wiseman, Richard (2010, p135)
- (42) Planellas, Marcel and Svejenova, Silviya (2007, pp8-9)
- (43) Torr, Gordon (2008, p72)
- (44) Gioia, Ted (2006, p207)

- (45) Zuckerkandl (1973, p4)
- (46) Csikszentmihalyi, Mihaly (2009, p120)
- (47) Boden, Margaret A. (2004, p1)
- (48) Morrison A., Rossing T.D. (2009, p66)
- (49) Boden, Margaret A. (2004, pp3-6)
- (50) Bloore, Peter (2012, in press, chapter seven)
- (51) Boden, Margaret A. (2004, p22)
- (52) Gladwell, Malcolm (2008, pp38-39 and p40)
- (53) Boden, Margaret A. (2010, pp53-3 and p57)
- (54) Amabile, Teresa M. (1996, chapter one, second paragraph of section on *A Recurrent Theme: Intrinsic versus Extrinsic Motivation*)
- (55) Csikszentmihalyi, Mihaly (2008, p67)
- (56) Amabile, Teresa M., Hadley, Constance N. and Kramer, Steven J. (2002, pp 60-61)
- (57) Bailey, Derek (1992, p85)
- (58) Lessig, Lawrence (2004, chapter 2, 8th paragraph)
- (59) Csikszentmihalyi, Mihaly (2008, pp49-66)
- (60) Csikszentmihalyi, Mihaly (2009, p113)
- (61) Boden, Margaret A. (2004, p58)
- (62) Torr, Gordon (2008, p167 and p79)
- (63) Csikszentmihalyi, Mihaly (2009, p53 and pp56-7)
- (64) Siebert, Al (2010, p30)
- (65) Gioia, Ted (2006, p13)

Bibliography

Amabile, Teresa M. (1996) *Creativity in Context, Update to The Social Psychology of Creativity* Westview Press, Kindle edition, downloaded from Amazon.com 2012

Amabile, Teresa M., Hadley, Constance N. and Kramer, Steven J. (2002) *Creativity Under the Gun* Harvard Business Review August 2002

Bailey, Derek (1992) *Improvisation, Its Nature and Practice in Music* Da Capo Press. USA

- Boden, Margaret A. (2004) *The Creative Mind, Myths and Mechanisms* Routledge, London, Kindle edition, downloaded from Amazon.com 2012
- Boden, Margaret A. (2010) *Creativity and Art: Three Roads to Surprise* Oxford University Press, Oxford
- Bloore, Peter (2012, in press) *The Screenplay Business: Managing Creativity and Script Development in the Film Industry* Routledge, Oxford, (unpublished draft manuscript, intended for publication September 2012)
- Czikszentmihalyi, Mihaly (2009) *Creativity: Flow and the Psychology of Discovery and Invention* Harper Collins e-books, Kindle edition, downloaded from Amazon.com
- Czikszentmihalyi, Mihaly (2008) *Flow: The Psychology of Optimal Experience* Harper Perennial Modern Classics, New York, London, Toronto, Sydney, New Delhi, Auckland
- Gioia, Ted (2006) *Healing Songs* Duke University Press, Durham and London
- Gladwell, Malcolm (2008) *Outliers, The Story of Success* Allen Lane, London
- Kaufman, Josh (2010) *The Personal MBA, A World-Class Business Education in a Single Volume* Penguin Group, London
- Lessig, Lawrence (2004) *Free Culture: How Big Media Uses Technology and the Law to Lock Down Culture and Control Creativity* Penguin Press, New York, Kindle edition downloaded from Amazon.com
- Morrison A., Rossing T.D. (2009) *The Extraordinary Sound of the Hang* Physics Today, March 2009, p66 Available online at http://ptonline.aip.org/journals/doc/PHTOAD-ft/vol_62/iss_3/66_1.shtml?bypassSSO=1
- Planellas, Marcel and Svejnova, Silviya (2007) *Ferran Adrià and elBulli* case study from Esade Business School
- Siebert, Al (2010) *The Survivor Personality, Why Some People Are Stronger, Smarter, and More Skillful at Handling Life's Difficulties... and How You Can Be Too* Perigee, New York
- Torr, Gordon (2008) *Managing Creative People, Lessons in Leadership for the Ideas Economy* John Wiley & Sons, Chichester, Kindle edition downloaded from Amazon.com 2012
- Wessel, D., Morrison, A. and Rossing, T.D. (2008) *Sound of the Hang* Paper at Acoustics 2008 in Paris, published online at <http://webistem.com/acoustics2008/acoustics2008/cd1/data/articles/002762.pdf>
- Wiseman, Richard (2010) *59 Seconds: Think a Little, Change a Lot* Knopf e-book, Kindle edition downloaded from Amazon.com 2012
- Zuckerandl (1973) *Sound and Symbol, Music and the External World* Princeton University Press, Princeton